

**Synthesis of Results and Lessons Learned: IDRC Funded Urban
Agriculture Projects in Latin America and the Caribbean**

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ACRONYMS

CAD	Canadian Dollar
CFP	Cities Feeding People
CIDA	Canadian International Development Agency
EIA	Environmental Impact Assessment
GDP	Gross Domestic Product
GIS	Geographic Information Systems
IDRC	International Development Research Centre
LAC	Latin America and the Caribbean
NGO	Non-Governmental Organization
PAHO	Pan-American Health Organization
PI	Program Initiative
RD	Republica Dominicana currency
RUAF	Resource Centre in Urban Agriculture and Forestry
UA	Urban Agriculture
UH	Urban Horticulture
USD	United States Dollar
WHO	World Health Organization

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Introduction

The IDRC Programme Initiative (PI), Cities Feeding People (CFP), commissioned this report to provide elements for the program's internal and external review processes. The objective of this activity was to produce a synthesis of the results, impacts and lessons learned from the program's Latin American and Caribbean projects that would inform the design and implementation of future urban agriculture interventions. The elaboration of this document involved the review of publications and project documentation available in four different languages (Spanish, English, French and Portuguese) of a first and second generation of IDRC supported urban agriculture projects in Latin America and The Caribbean. The document presents syntheses of project results and an assessment of eight major areas of impact identified by CFP namely,

The first generation of IDRC urban agriculture funded projects in Latin America and the Caribbean mainly focused on local level food security and environmental needs. The results and impacts achieved in this first generation facilitated the identification of future research needs, including the search for more effective mechanisms for the recognition of urban agriculture and its integration in local development plans. As a result a second generation of CFP supported research projects was developed with a regional focus to explore tools and processes for the inclusion of urban agriculture in local and national political and economic agendas.

Structure

This document is divided into five sections. The *Introduction* explains the rationale and objective for the commissioning of the report and provides an overview of its structure.

Section one and two present the syntheses of generation II and I projects. The synthesis of each project is structured as follows:

- Project summary - provides a general overview of the context, the recipient institution and the total cost of the project.
- Background - provides an overview of the socio-economic, political and environmental context in which the activity has taken place.
- Objectives - describes general and specific objectives outlined in the project proposal.
- Methodology - provides, when possible, a critical view of research methods and tools used in the research.
- Results - gives a qualitative and quantitative account of project results and outputs.
- Impacts - assesses positive and negative impacts of project results in the eight areas identified in the PI Prospectus. The eight areas identified include human resource development, institutional capacity building, effective local/regional partnerships, contribution to multi-disciplinarity, scientific and methodological advances, gender focus, research result utilization and fund leverage.

- Lessons learned - presents a number of lessons learned by project leaders and implementing agencies and, in certain cases, includes the author's personal assessment.
- Publication list and a brief review - provides an up to date inventory of project documents and publications produced, either related to the project or produced by the implementing agency or members of the research team. A critical review of the publications is provided, when the quality of the document allows it.

The *Conclusion and Recommendations* section identifies major strengths, weaknesses and challenges for urban agriculture (UA) as well as challenges faced by the recipient agencies during the implementation of the projects.

The document concludes with an *Appendixes* section that presents two tables per project. Table one summarizes project objectives, results and methodology used; while table two recapitulates the eight areas of impact assessed that were relevant to the PI and results achieved by area.

I would like to take this opportunity to thank Luc Mougeot and Kristina Taboulchanas for their useful comments in the elaboration and final presentation of this document.

Section I. First Generation of Projects

- I.1. The Management of Solid Waste and Urban Agriculture (UA) in the City of Santiago de los Caballeros, Dominican Republic (002759)**
- I.2. Evaluation of Urban Agriculture as a Component of the Local Economy in Two Zones of Havana, Cuba (03753)**
- I.3. Reuse of Wastewater in Agriculture, Cochabamba, Bolivia (000921)**
- I.4. Urban Horticulture Technologies in the Cities of Port-au-Prince and Gonaives, Haiti (03152)**
- I.5. Urban Agriculture in Metro Fortaleza, Brazil (2748/002749/403764)**

I.1. The Management of Solid Waste and Urban Agriculture (UA) in the City of Santiago de los Caballeros, Dominican Republic (002759)

Project Summary

This research activity took place in the City of Santiago de los Caballeros in the Dominican Republic. The duration of the project activity was three years, from October 1996 to 1999, with a total cost of 229,163CAD. The recipient and executing agency was the Centro de Estudios Urbanos Regionales – CEUR (Urban and Regional Studies Centre) from the Pontificia Universidad Católica Madre y Maestra – PUCMM. This research project attempted to address two major problems through the adoption of UA practices in Santiago: the management of solid waste and food insecurity. The main objectives of the project were to perform a cost-benefit analysis and elaborate a development proposal. The project was directed towards influencing decision-makers. As such, it generated an important database and set of proposals dealing with both waste management and food security. Results presented are based on a diagnosis for addressing both issues. A summary of project results, objectives and impacts are presented in Appendix I.

Background

Santiago de los Caballeros is the second largest city in the Dominican Republic with a population of 500,000. Santiago is the economic centre of the Cibao Region, classified as a dry tropical ecosystem. The main economic activity in the city is found in free trade industrial zones dedicated to the manufacturing of textiles. This economic activity has led to increased migration from rural to urban areas, which has resulted in the establishment of small informal businesses (auto-repair shops, food stalls, grocery stores) around free trade zones. These two factors have resulted in the subsequent loss of fertile urban and peri-urban soil, making access to cultivable land and food more difficult. This has also contributed to an increased production of solid waste in the city. Presently, the city is composed of 200 neighbourhoods, 54 of which live below the poverty line and are densely populated (33,000 inhabitants/km²). Overall these processes have resulted in the following:

- Reduced municipal management: where the best public services and resources are concentrated in a few sectors;
- Environmental degradation: reflected in poor living conditions, lack of basic services, water pollution, occupation of areas vulnerable to physical phenomena such as floods and landslides. Degradation is exacerbated by liquid and solid waste accumulation due to the lack of infrastructure, technical capacity of local authorities and lack of regulatory measurements for businesses.

UA was recommended as a popular alternative to face the issue of waste management in Santiago and the increasing need to find new solutions for the urban poor. The proposal was based on the idea that UA could be linked to waste management, and that available spaces could be simultaneously used for agriculture as well as liquid and solid waste recycling areas. In

Santiago, poor families engage in agricultural activities such as the cultivation of flowers, fruits, vegetables, grains and the rearing of small livestock in marginal spaces. UA activities practiced by poor communities in marginal areas have historically been underestimated by local authorities and ignored by academics. Paradoxically, the principal use of available urban land in Santiago, besides residential use and idle spaces, is agriculture.

According to socio-economic studies performed by the CEUR, the population of urban farmers in Santiago is approximately 3,000 persons. Seventy percent are men originally from rural areas in their late 40s, the majority of which are dedicated to crop production. The remaining thirty percent are women, the majority of which are dedicated to livestock production, which usually takes place around the family lot. Twenty five percent of these women are of urban origin and participate in the production of crops within the city. The choice of crops for cultivation is based on local food habits. Generally, most urban farmers plant the same crops, however the combination of crops¹ varies depending on the farmer and type of UA practiced.

The two types of UA that are practiced in Santiago are spontaneous (without external help/influence) and induced (with external help/influence). Spontaneous agriculture is the most popular type and is mainly practiced by rural immigrants. The cultivation method and choice of crops resemble the typical “conuco²” from the hinterlands. Individuals originating from urban areas, mainly practice induced agriculture. The methods and choice of crops are similar to those commonly found in gardening literature. Crop production is mainly practiced for subsistence purposes. However, a small number of farmers plant their crops and sell them in their local neighbourhood grocery stores, and to a lesser extent directly to neighbours and food distribution entrepreneurs. It was found that UA is a source of employment especially in cases where the urban farmer hires labour for soil preparation and crop maintenance.

Objectives

- General

The general objective of this project was to describe and assess ongoing peri and intra-urban agricultural production and waste management in the city of Santiago de los Caballeros. The study was designed to examine the cost and benefits of current practices in both sectors and recommend a program to stimulate the reuse of municipal waste by agricultural production in the city.

- Specific

- a. To describe current nature and extent, and assess growth potential for specific agricultural production systems in specific areas, both intra-and peri-urban, as well as to describe the current status of fluid and solid waste management and the reuse potential of waste in the aforementioned agricultural systems.
- b. To prepare a cost-benefit analysis of current agricultural production and waste management

¹ For further detail about species used please refer to technical reports available.

² Regionalism used to designate agricultural plots in rural areas.

in the city from an economic, environmental, health and social view.

- c. To propose, discuss and elaborate a program to stimulate UA and its relationship with solid waste recycling.

Methodology

In this study, UA refers to agricultural activities such as the production of ornamentals, fruits, vegetables, grains and livestock using marginal urban spaces like creeks, back yards, empty lots and riverbeds. However, for methodological reasons and given the context of UA in urban³ and peri-urban⁴ Santiago, this research activity considered only spaces dedicated exclusively to the production of agricultural produce for food consumption (crops and livestock), and involving relatively high and visible soil preparation and crop maintenance. Crops like tobacco and fodder were also considered due to their importance in the economy of peri-urban families. Although widely practiced, activities such as hydroponics, fruit and kitchen gardening were not considered, because the research team considered that their quantification and assessment required different methodological procedures.

A multidisciplinary approach was implemented consisting of quantitative and qualitative tools as well as a literature review and analysis of previous studies. The researchers explored and sought out links in every area relevant to the issue of UA and waste management in Santiago and compared the situation to other Latin American and Caribbean countries. Some of the most significant results of the methodology came out of the socio-economic study used to analyze the overall situation of UA in Santiago.

- Quantitative methods
 - Statistical analyses (stratified random and cluster sampling)
 - Population census
 - GIS and cartographic documents (maps, satellite images, aerial photographs)
 - Soil sampling and classification
 - Physical and chemical analyses of solid waste (field and lab work)
- Qualitative methods
 - Visits to households
 - Structured interviews
 - Field visits to UA plots
 - Workshops (games, support groups, evaluation of other experiences)

³ 9.12% (315 Ha.) of the total urban area of Santiago (3,456Ha.) is dedicated to the production of crops & livestock.

⁴ 29% (838.2 Ha.) of the total urban periphery (2,945Ha.) is dedicated to the production of livestock, fodder & tobacco.

Results from this study

- Demonstrate that in terms of land use, approximately 16% (1153Ha.) of the total urban and peri-urban area (6401Ha.) in Santiago is dedicated to UA. Most people practicing UA in Santiago are from poor families that use available urban spaces to grow food to complement their diet. Food security can therefore be seen as the principal motive to practice UA. In Santiago, UA is considered a precarious activity due to an uneven competition between residential development and agriculture. Construction displaces urban farmers who begin to look for other available spaces and eventually are forced to relocate as the city expands, this process is known among national urban professionals as the location – substitution – re-location cycle.
- A diagnosis of the solid waste situation in Santiago, which included quantification and classification of total waste production by social sectors. This diagnosis also included information on waste composition, mode of transportation, final disposal, legal and administrative aspects, recycling circuits, re-utilization of potential residue in agriculture, and mapping of informal disposal sites.
- A diagnosis of Santiago's agriculture by neighbourhood blocks and peri-urban zones⁵. The use of geographic information systems in the elaboration of important maps.
- An economic analysis for solid waste management and agriculture.
- Demonstration of important relationships between solid waste and UA, use of residues in agriculture, and the role of agriculture in the city's waste management⁶.
- Six project proposals related to short and mid-term interventions for the integrated management of solid waste in municipal dumping sites, hospitals and markets.
- Elaboration of proposals for the development of an integrated program of waste management and urban agriculture.

Impacts

The project had impacts in the following areas:

Human resources development

- Research team's improvement on GIS knowledge and techniques providing new skills for future projects.
- Acquisition of knowledge and new perspective on urban agriculture. Team professionals became clear on the differences between rural and urban agriculture.
- The implementation of various activities including workshops at various community and government levels; seminars; courses, tutorials and workshops in the Urban & Municipal Planning Masters program; courses in the Environmental Management Postgraduate program; support (collaboration & consulting) from foreign students interested in the topic; and participation in international conferences.

⁵ Location, type of production, destination, quantity, who produces, competition with other urban uses, changes in soils use, motivations, income, family participation.

⁶ Empty lots and cultivated ravines as way of avoiding the emergence of informal disposal sites.

- Various types of publications including a book, seven newspaper articles (5 published in local and 2 in international papers) and one booklet.

Institutional capacity building

- The creation of a high quality database to be used in planning and development projects, and future research in the city of Santiago.
- The creation and experimentation of a methodology that can be applied in other cities.
- Greater availability and accuracy of city data for university students and CEUR clientele⁷.
- Improvement on the operative capacity of CEUR's cartography laboratory. There is new equipment and programs for GIS use.

Effective partnerships

- The creation of inter-institutional co-operation mechanisms amongst organizations responsible for the administration of the city, community committees and academic programs⁸.
- The inter-institutional collaboration among the different organizations resulted in the elaboration and formal presentation to municipal authorities of the document " Propuesta para el Manejo de Desechos Solidos en Santiago (Proposal for the Management of Solid Waste in Santiago)".
- A number of proposals made within the aforementioned document are related to the creation of Santiago's Solid Waste Integral Management Plan, which led to the establishment and official constitution of the Santiago Solid Waste Commission by Santiago's Municipal Council.
- The type of collaboration created and reputation of the research institutions motivated the central government to offer support for a training program and guarantee other projects within relevant government departments and international organizations.
- The valuable collaboration of one private enterprise through the provision of staff and equipment during the fieldwork.

Negative impacts reported during the assessment of project's impacts at this level include the following:

- Firstly, the researchers faced major difficulties during the work and collaboration activities with municipal authorities. Occasionally, these difficulties were caused by conflicts among political parties. Secondly, results of the project were taken by politicians and manipulated in order to advance political agendas. Thirdly, CEUR's findings revealed the serious institutional-administrative limitations, inefficiency and political bias of the city council.

⁷ Individuals seeking information on CEUR's databases.

⁸ The integration of two Masters and one postgraduate diploma program in environmental management offered by PUCMM.

Contribution to multi-disciplinarity

- The research team was composed of professionals from various disciplines (biology, ecology, economy, agronomy, urban planning, environmental engineering, soil sciences, geography and GIS). The team's multi-disciplinary focus was active, throughout the project, from the design phase to the final presentation of results and publications.

Scientific and methodological advances

- This project resulted in the first diagnostic study to produce a high quality database for decision-makers on the management of solid waste. Information on solid waste available in the database is basic and novel, and can be understood at various academic and cognitive levels. Moreover, the accuracy of procedures and efficacy of field surveys demonstrate the flexibility of the methodology and its applicability in other cities.
- The project represents the first comprehensive study in the Dominican Republic on UA at a city scale. Previous studies are limited to isolated case studies, of an exploratory nature and focus on particular projects. To date, it is the only study known to use neighbourhood blocks as geographical units for sampling and analysis.

Research results utilization

- The application of research results has been one of the main concerns in this study. Several project proposals have been developed with support from Santiago's Municipal Council and other organizations. Projects are developed around the three critical sectors⁹ related to solid waste in the city. Implementing agencies include the city council, private enterprises, universities, public health institutions, inter-institutional co-operation mechanisms (see "Effective partnership" section) and community committees.
- Based on the study's results on institutional and financial aspects, Santiago Council's Sanitation Department is requesting CEUR's collaboration in the creation of an improved administration plan. The successful adoption of research results are greatly owed to the dissemination and presentation strategies employed in the project.

Fund leverage

- A key element to the sustainability of the project involved local participation through funding (60,000RD) and in-kind contributions (personnel & equipment) from private enterprises
- International foundations¹⁰ (270,000USD), and the central (220,000RD) and local governments (300,000RD and 10,000RD monthly) have funded several support projects.
- International collaborations have also emerged from this research project between CEUR, one involving the University of Fritzburg, Germany and one with the University of Huelva, Spain.

⁹ Rafey's dump, hospital waste and organic waste from the Yaque market.

¹⁰ Ford & Kellogg Foundations.

Lessons Learned

1. Overall, it was concluded that the project had positive impacts. The project was relevant to the needs of both the population and the local government in order to solve the problem of solid waste in Santiago. Concrete examples of the changed perception regarding UA in the city of Santiago include: its incorporation into the environmental management strategy for the city; and, the new re-structuring process of the city council, which comprises UA as a strategy for food security under its organizational chart. The timely implementation of project activities during municipal elections helped disseminate the information and raised public interest. It also provided the research team with opportunities to establish working relationships with the city council authorities, unions, opposition parties and central government institutions. Before the project, UA was not considered a significant activity in Santiago. However, its association to the problem of solid waste increased UA's profile as a waste management strategy and has now been incorporated in key municipal documents¹¹.
2. The collaboration of private enterprises (eg. Santiago Cleaning Services enterprise) and foreign academic institutions into the project were very valuable. The collaborative relationships established between the research team and the Environmental Planning Department from Puerto Rico University was also valuable.
3. The research institution's lobbying activities were supported by the organization's prestige and public recognition. Also, the various dissemination strategies used by the CEUR team helped to concretize results. Dissemination activities included workshops, seminars, newspapers articles, publications, courses and conferences.

Publication List and Brief Review

Book:

del Rosario, Juan, et al. 1999. Manejo de Resíduos Solidos y Agricultura Urbana en la Ciudad de Santiago de los Caballeros. Pontificia Universidad Católica Madre y Maestra, Centro de Estudios Urbanos y Regionales. Santiago de los Caballeros, October 1999. CEUR/PUCMM & IDRC.

This book provides comprehensive and detailed information on the actual situation of solid waste management in the city of Santiago. The document, which is also part of the project reports presented to IDRC, informs the reader about the dynamics, legal framework and context in which UA takes place in relation to solid waste management. In conclusion, this book is the departing point from the fulfillment of research objectives and methodologies, towards an effort to find solutions to the problem of solid waste by means of UA from research findings.

¹¹ Strategic Plan for the City and the Municipality of Santiago (legally established entity), Normative Guide of Santiago (governs soil use) and proposals for restructuring Santiago's council.

Book articles

del Rosario, Juan. 1999. "Manejo de Desechos Solidos y Agricultura Urbana en la Ciudad de Santiago de los Caballeros: Impactos del Proyecto", in Agricultura Urbana en America Latina y el Caribe: Impactos de proyectos de investigación. FLACSO & IDRC – Canada, pp.29-36

This article originated from the workshop – Researching the Development of Urban Agriculture in Latin America and the Caribbean: Balance and Optimization of Projects' Impacts", in San Jose, Costa Rica, May 23-27, 1999.

Final project reports

del Rosario, Juan, et al. 1999. "Parte I - La Situación de los Resíduos Solidos y la Agricultura Urbana en la Ciudad". Manejo de los Resíduos Solidos y Agricultura Urbana en la Ciudad de Santiago de los Caballeros Pontificia Universidad Católica Madre y Maestra, Centro de Estudios Urbanos y Regionales. Santiago de los Caballeros, October 1999

del Rosario, Juan, et al. 1999. "Parte II - Propuesta Progrrmatica sobre los Resíduos Solidos y la Agricultura Urbana en la Ciudad". Manejo de los Resíduos Solidos y Agricultura Urbana en la Ciudad de Santiago de los Caballeros. Pontificia Universidad Católica Madre y Maestra, Centro de Estudios Urbanos y Regionales. Santiago de los Caballeros, October 1999

del Rosario, Juan, et al. 1999. "Parte III - Impactos del Proyecto". Pontificia Universidad Católica Manejo de los Resíduos Solidos y Agricultura Urbana en la Ciudad de Santiago de los Caballeros. Madre y Maestra, Centro de Estudios Urbanos y Regionales. Santiago de los Caballeros, October 1999

Bulletin articles

"Presentan propuesta para la gestión de residuos sólidos en Santiago: Maestría Ingeniería Ambiental hace investigación". Noticias PUCMM, Boletín informativo universitario, diciembre, 1998, Año XII – Vol. 12, pp.6&7

del Rosario, Juan. 1998. "La agricultura en la ciudad: el caso de Santiago de los Caballeros" in *La Era Urbana*. Invierno1998.

Various local newspapers published several articles related to the topic. Copies of articles can be found in Part III: Impactos del Proyecto, of technical reports.

I.2. Evaluation of Urban Agriculture as a Component of the Local Economy in Two Zones of Havana, Cuba (03753)

Project Summary

This research activity took place in the province of Havana City, which encompasses an area of 727 Km² and sustains a population of 2,185,076 inhabitants, representing 20% of the total population in Cuba. Two zones were selected for the study: a section of the Havana Metropolitan Park (HMP) project situated east of Havana City and the Camilo Cienfuegos district, northwest of the city. The duration of the project activity was three years, from July 1998 to July 2001, at a total cost of 105,000CAD. The recipient and executing agency was the Fundación Antonio Núñez Jiménez de la Naturaleza y el Hombre – FUNAT, a non-governmental organization created in 1994. This research project examines UA activities as a response to the Cuban economic crisis, the legal framework in which activities take place and the importance of UA in the local economy. The main objectives of the project were to assess, through the evaluation of urban environmental requirements, the potential of UA as a dynamic agent in the local economy and participatory communication¹² of research results within the country and through the AGUILA Network. The process of participatory communication culminated with the publication of the book “Agricultura y Ciudad” (Agriculture and the City). A summary of project results, objectives and impacts are presented in Appendix II.

Background

Historically, Cuba has depended on food imports to satisfy its needs. More than 30% of arable land is dedicated to the production of sugar cane. Until recently, sugar cane was the principal commodity in the country's economy. With the collapse of the Soviet Union in 1989, Cuba lost over 80% of its foreign trade including imports of fossil fuels, food and agricultural inputs. Adding to the problem was the continuous fall of sugar prices on the international markets from 0.60 USD in the mid 70s to 0.09 USD in 1992. By 1993, the GDP had been reduced by 35%. The economic crisis resulted in food shortages of both imported and local food products seriously impacting the nutritional intake of the population. Although, in the past few years nutrition has improved it is still below the recommended daily intake of 2500 cal and 75 g of protein per person. The economic crisis also affected important public services such as waste collection. This situation led to the deterioration of the city's sanitary conditions and the emerging of waste dumps in residential areas.

Among the many local solutions to the ongoing crisis, urban agriculture (UA) was adopted as an alternative strategy to improve food availability. Ten years later, 12% of the land in Havana is dedicated to UA. UA activities link more than 22,000 urban and peri-urban farmers who supply Havana's population with 150 – 300 grs (per capita per day) of fresh vegetables and herbs. The

¹² Participatory communication refers to the sharing and feedback of information as well as exchange of results using diverse strategies (networking, workshops, etc.) at the local, national and international level and among various stakeholders.

use of idle spaces for farming has also contributed to the elimination of urban dumps, thus improving city conditions. UA has evolved from subsistence farming to a profitable economic activity using local resources and minimal transportation costs. While UA has become an important strategy for food security, the main agricultural activities in the Cuban economy are and will continue to be the production and export of sugar and tobacco.

The two areas selected for the study were the Havana Metropolitan Park (HMP) and the district of Camilo Cienfuegos. Selection for the zones were based on the following criteria:

- The presence of diverse types of UA;
- The ability to appreciate the difference between the possibilities and limitations for agricultural development within the area;
- The potential for the processes and results obtained from the study to serve as a reference for other zones;
- The existence of other income generating activities in the area contributing to the local economy; and
- The presence of institutions, specialists, authorities, producers and other groups that would be interested to participate in the project.

The study consisted of a detailed assessment of the different types of agricultural practices, land use & ownership, a cost-benefit analysis, the characterization of physical conditions including soil & irrigation water, and an assessment of the socio-economic conditions, legal frameworks and social-organizational implications for UA.

Havana's green belt consists of 4 big city parks¹³ among them HMP, which is the closest to the urban core. HMP owes its existence to a 1963 municipal plan for Havana that included the development of green areas and a park system for the city. The Provincial Planning Office did not approve other types of land use until the late 80s. HMP covers an area of 700Ha and is home to 193,948 inhabitants, of which 9,000 live within the project area. There are 94 farmers using the land for various agricultural purposes. Presently, there are 3 types of UA operations taking place in the area of the park: 1. State owned farms (5) responsible for executing the park's agro-forestry program (large scale production). 2. The Nguyen Van Troi¹⁴ Credit & Services co-operative and 3. Subsistence farming¹⁵.

Camilo Cienfuegos encompasses an area of 590Ha and has 11,887 inhabitants. Over the past 10 years the area has been characterized by significant UA activity and is cultivated by 124 farmers. The area was the first residential area built by the socialist government in 1959. It is located east of the Havana Bay tunnel.

The early 90s marked the beginning of UA practices in this area. Between 1990 - 1995, five horticulturist groups were organized that brought together 152 urban farmers. Presently, there

¹³ National Zoo Park, National Botanical Garden, Lenin Park and the HMP.

¹⁴ Fifty-seven members dedicated to diverse crop and dairy farming.

¹⁵ Twenty-eight non-organized farmers dedicated to subsistence agriculture (low input agriculture in an area between 70 & 100m²).

are two organized groups in the area: Pedregal¹⁶ and Paraiso¹⁷, and a third non-organized group composed of independent urban farmers. Independent urban farmers represent 50% of the farmers working on 40% of the land used for agriculture in the municipality.

The Havana experience proves that UA is a feasible alternative and that it can contribute towards making cities more sustainable. Therefore, it is extremely important to assess the costs and benefits that favour UA, paying particular attention to the availability of resources and research developments.

Objectives

- General

The general objectives of this project were:

1. To assess the potential of UA as a dynamic agent in the local economy, and assess the potential for its short and mid term integration; and
2. To socialize the research within the country and the AGUILA network. The socialization will take place as the research is shared with local institutions and populations.

- Specific

- a. To characterize the local economy;
- b. To explore land management options including UA;
- c. To recommend suitable UA systems and tenure arrangements for two city sectors; and
- d. To assess the market potential for UA: production and products; impact on nutrition; employment; food price behaviour; impact of foreign aid on UA projects; water and waste reuse by UA; food processing and the role of women.

Methodology

In Havana, UA emerged in response to a national economic crisis. Furthermore, the search for new and improved UA technologies has also contributed to the reduction of pollution in the city, through the expansion of urban farming activities near dumping sites and the establishment of more appropriate waste disposal sites. In this study, UA refers to the production of food in vacant urban spaces.

Existing types of UA in Havana have evolved and developed with the support of the government and through promotion campaigns to use public land for the production of food. These activities are regulated and controlled by the state. The extent of government involvement coupled with an existing economic crisis called for the use of a descriptive and flexible methodology (deductive and inductive) that could:

- enable the research team to identify and evaluate impacts, results and relationships of agricultural activities with the urban environment through an inter-institutional and inter-disciplinary focus; and

¹⁶ Approximately, 2.5Ha of land used for high yield horticulture units is managed by government institutions.

¹⁷ 53 farmers in 8.6Ha of land given in usufruct to retired members of the armed forces and ministry of home affairs.

- be easily re-adjusted to the sequences of actions planned and expected results.

The use of flexible methods and tools would lead to the development of capacities on the topic of UA among team researchers, to later influence entities linked to the management and control of the city.

The implementation of project activities involved a combination of quantitative and qualitative research methods and tools. However, most activities were strongly oriented towards the qualitative aspects of the research. One important aspect is the researchers' thoroughness and organization of steps and tasks taken during the planning and implementation phases.

In the methodological process, criteria were established to assess the development of UA at the project, city and national levels. This process was followed by a thorough and detailed study of the selected zones. Once the scope of UA activities in the local environment was evaluated, its inclusion was proposed in the land use plan for the city. The following aspects of UA development in Cuba were analyzed during this research: introduction of UA in urban planning; legal framework; most popular and appropriate technologies used; actors involved; land tenure and ownership; farmer's relations; commercialization; water and organic waste use; importance in household economy; gender relations and resource mobilization (external contributions).

The research team was formed of a group of professionals from various disciplines¹⁸, institutions and farmer's groups. The research work was divided in three steps:

Graph 1: Research steps

<p>Step 1:</p> <ul style="list-style-type: none"> ➤ find a common language ➤ revalidate objectives ➤ outline actions to be taken 	<ul style="list-style-type: none"> ➤ elaborate and approve methods & tools ➤ collect information ➤ task distribution & execution
<p>Step 2:</p> <ul style="list-style-type: none"> ➤ evaluation of information collected ➤ identification of topics to be incorporated, strengthened or modified 	<ul style="list-style-type: none"> ➤ identify areas that needed more information ➤ perfection of tools ➤ redistribution of tasks
<p>Step 3:</p> <ul style="list-style-type: none"> ➤ distribution of tasks according to the expertise of institutions and individuals involved 	

¹⁸ Agriculture, forestry, geography, agronomy, animal sciences, architecture, hydraulics, sociology, biology and information sciences

The execution of the project involved the following:

- a. Field research through workshops and meetings for the analysis of existing information relevant to the research.
- b. Compilation of documents elaborated by individuals and institutions in their area of expertise.
- c. Forecasting of potential changes that could affect the research process and that could be caused by external factors (socio-economic and political changes at the local and national level).

- Qualitative tools used

- consultations with experts
- structured and semi-structured interviews with farmers
- field observations
- informal interviews with key and outside informants were also used to collect quantitative information

- Quantitative tools used

- censuses
- publications and reports

The communication process was participatory through conferences and workshops at the national, regional and international level.

Results¹⁹

The study resulted in the following:

- The establishment of a 15-member inter-disciplinary and inter-institutional team to look at the UA – urban environment interactions.
- A comprehensive overview of UA evolution in Havana. The evolution of UA in Havana has given rise to five different urban food production systems. This evolution has been facilitated by government decentralization strategies for the promotion and development of UA. Management and administration structures and government control of UA in Havana emerge and evolve as a consequence of its own development. The following grid represents a broad overview of the different components. Some of these components have, however, become more sophisticated during the study's evolution. For detailed information please refer to Chapter III: Evolution of UA in the City of Havana in *Agriculture and City: A key to sustainability* (Cruz & Sánchez, pp.29-69; 2001).

¹⁹ Some of the results presented in this section are based on a set of conclusions made during a final workshop organized for the socialization of final research results.

Graph 2: Overview of UA evolution in Havana

Types of UA	Emerged in:	Plots Size & Purpose	Land Ownership	Type of production
State auto-consumption	1989	≥ 1Ha, To supply cafeterias in workspaces	Government land given in usufruct.	Vegetables, fruits & small livestock.
Popular orchards	1991	≤1,500m ² Family auto-consumption	Government urban land in free usufruct.	Vegetables, fruits & small livestock.
Organoponicos	1993	2000-5000 m ² Auto-consumption & small scale commercialization	Collective use of urban spaces without agriculture vocation	Vegetables
High yield organoponicos	1994	≥ 1Ha, Commercialization	State use of urban spaces without agricultural vocation	Horticulture & fresh herbs
Cultivation houses	1998	Similar to green houses. Production destined for tourist consumption.	Free trade zones & Agro-enterprise land	High yield horticulture
Individual farmers				

- In addition to the types of UA indicated above, three different types of social organizations related to UA production were identified:
 - Horticulture/small farmers clubs → Most common among small farmers
 - Services & credits co-operatives → Most common among farmers
 - Basic production units co-operatives → Most common in intensive horticulture & popular terraces
- UA has been a major contributor to food security for the population of Havana City. The availability of vegetables and fresh herbs has reached yields that range between 150 & 200g/per capita/day²⁰. Also, commercialization opportunities contributed to the development and strengthening of the activity, making evident its contribution to the local economy.
- Evaluation of UA in 2 zones of Havana that included analysis of technological systems, benefits, use of waste-water, review of existing support and collaboration strategies to farmers, physical and environmental conditions. In the case of Havana Metropolitan Park, UA activities were handled in the same way as traditional rural farming activities. Workshop results concluded that, UA should be approached differently and considered as a fixed activity in land use and management plans.
- The issue of irrigation in UA requires greater emphasis in research and project development. There is need to propose and implement alternative solutions to the problem.
- Future research must include the evaluation of community economy, relationships, and informal economy clusters.
- One major publication through AGUILA Network that include projects results (“Agricultura y Ciudad: Una clave para la sustentabilidad”).

²⁰ Gramma, La Habana, 26 de abril & 31 de julio del 2000; pp. 59 in Cruz & Sanchez, 2001.

Impacts:

The project had impacts in the following areas:

Human resources development

- The research team participated in 7 workshops and more than 40 working meetings and consultations.
- Interaction between recipient NGOs and other partners, including members of the research team, through the establishment of working relationship with government institutions and farmers that participated in the analysis of results.
- Exchange of experiences and discussions on the researched topics in local and regional events allowed the interaction of the research team with other regional partners.
- Researchers gained greater objectivity and broadmindedness to evaluate the implications of sectorial management in UA.
- The team was able to identify key actors that should participate in the management of the urban environment, including the evaluation of economic, technical, agricultural and environmental aspects involved.
- A participatory communication process, including finding a common language among UA researchers and professionals was achieved at the national and regional level.

Institutional capacity building

The project enhanced the institutional capacity of FUNAT through the following:

- The development of UA program working objectives, including the elaboration, presentation and approval of several projects within this period.
- By influencing the UA problematique in the country and the region, including growing relationships with other national and international institutions and organizations.
- Strengthening of capacities among institutions, experts, farmers and collaborators through the facilitation of resources, training activities and participatory fieldwork.
- The organization was strengthened in terms of human and material resources, and inter-institutional relationships to organize regional project meetings including AGUILA's 2nd general assembly and national and international events for the socialization of project results.

Effective local partnerships

- Experts from government and academic institutions were part of the research team. There were also other collaborators outside the team that assisted in different aspects of the project and in the development of UA in Havana and other cities.
- The implementation of new experiences such as organic waste collection and recycling in one of the areas of study effectively established relationships among farmers, consumers and local government.
- Relationships were strengthened with representatives from foreign institutions supporting local NGOs, in the search for alternative external funding sources.

- There was a high degree of inter-institutional collaboration at the regional level that included consultancy activities between the research team and the cities of Cuenca (Ecuador) and Santiago de los Caballeros (Dominican Republic).

Gender focus

- The implementation of a gender-training workshop with the support of IDRC and Cuban experts.
- 47% of the research team members were female.
- With the exception of information collected in the two areas of study there is insufficient information on gender and UA. At the national level there is lack of numeric information and analysis of needs and interest by sectors.

Contribution to multi-disciplinarity

- In Cuba there is lack of a multi-disciplinary approach in production types that can influence other equally important aspects such as profitability, urban soil use, solutions to water scarcity, use of household organic waste and the establishment of mutual benefit relationships. However, regardless of traditional perceptions, the research project took into consideration aspects and criteria from the agriculture, forestry, geography, agronomy, animal sciences, architecture, hydraulics, sociology, biology and information sciences disciplines.
- The research team is better prepared to implement research projects with a multi-disciplinary perspective, including gender. This experience will help farmers and technicians to convey a more integral view on UA.

Scientific and methodological advances

- It is Havana's first experience dealing with UA as an integral activity and taking into consideration its relationship to the urban environment. The flexibility of methodology used allowed the incorporation of innovative techniques and methods.
- A number of results were considered novel for the improvement of UA in Havana and the rest of the country. Among others, the impact of project results in UA policies resulting in the insertion of UA in the land use plan for the city was a major advance.
- The farmer-consumer relationship established through organic waste recycling and environmental education.
- The identification of ways to achieve greater environmental and economic sustainability in UA and its recognition as a key component of the local economy.
- The diversity of the research team allowed objective assessments that provided greater accuracy in case evaluations. This was of particular importance in cases with insufficient information. The procedure also established foundations for future work.
- The process of participatory communication allowed greater organization and systematization of results and contents of the information and topics addressed.
- The comparison of UA experiences in Cuba to that of other countries from the region helped to incorporate new points of view in national debates.

Research results utilization

- Although, the context might differ, results from this research could be useful in the implementation of similar projects in the region. Through a participatory communication process, the results of this research have been compared to the results of projects implemented in other countries (Ecuador and Dominican Republic). Furthermore, the research team was able to identify key issues in UA that need to be further researched in Cuba.
- The book resulting from this research activity can be useful to those interested in the topic, and to those interested in strengthening and improving UA activities with similar needs and objectives.
- In the last year of the project, the research team conducted the strategic planning for their UA program. The knowledge gained by the project team, research results and working relationships established in the implementation have resulted in a more participatory process with greater outreach.

Fund leverage

- Using project results, researchers were able to secure funds from other donors. For instance, the project has situated the NGO in a better position to attract additional resources for strengthening its institutional capacity, training of field staff, project development and presentation, and its relationship with the AGUILA Network and other international institutions.
- Various international organizations are funding projects that arose from this activity. These include the Australian Conservation Foundation, OXFAM Canada (95,200CAD), CIDA (150,000CAD), the German Foundation Heinrich Boll, and the German NGO KATE and Puente Norte-Sur.

Lessons Learned

1. In Cuba, UA emerged as a response to an economic crisis, thus ignoring research needs around the improvement and stability of agricultural activities in the urban context. As a consequence, UA became a highly centralized and hierarchical activity managed and controlled by the government. Since that time, government support has facilitated the country's evolution into more diverse and sophisticated types of UA.
Despite being in the middle of an economic crisis, in order to carry out this project successfully a series of time and resource-consuming strategies were required. The strategies included lobbying with central and municipal governments and community organizations, developing research capacities requiring a more participatory approach, and the identifying institutional and human resources.
2. The gender dimension in UA must be considered beyond numbers of women participating in technical and productive activities. At the national level there is lack of numeric information and analysis of needs and interest by sectors.
3. The analysis of UA activities in Havana demonstrated that 10 years of research on the development, evolution and demands of UA are not sufficient to change traditional

perceptions and behaviours (high mechanization, use of agro-chemicals, etc.) in agricultural production. There is an increasing need to refine urban and peri-urban agriculture through: the realization of cost-benefit analysis for each component; the maximization of resources offered by the city; the use of technologies that develop capacities and not dependency; the identification of a legal framework that responds to the needs of urban actors; and, further research to improve and make UA a more sustainable activity.

Publication List and Brief Review

Book:

Cruz, María Caridad and Roberto Sánchez Medina. 2001. Agricultura y Ciudad: Una clave para la sustentabilidad. Fundación Antonio Núñez Jiménez.

This book is a well-written and extensive piece of work with a wealth of information on UA activities in Havana City. The authors provide detailed information on a wide array of past and present UA activities. The book examines the conditions for the establishment of UA in Havana City, the legal framework supporting it and the social-political implications. It also examines the socio-economic importance through cost-benefit analyses of types of existing markets and commercialization of products, as well as environmental constraints that affect UA activities in the areas of study. Overall, the information provided in the book is interesting and enlightening. However, some of the most valuable pieces of information, in my view, are the methodological and participatory communication processes described, including activities involved in the discussion of UA activities in the land use plan of the city.

Book articles

Cruz Hernández, María Caridad. 1999. “Balance y Optimización de los Impactos del Proyecto de Investigación: Evaluación de la Agricultura Urbana como componente de la economía local en dos zonas de la Habana, Cuba”, in Agricultura Urbana en America Latina y el Caribe: Impactos de proyectos de investigación. FLACSO & IDRC – Canada, pp.37-48.

This article originated from the workshop – Researching the Development of UA in Latin America and the Caribbean: Balance and Optimization of Projects’ Impacts”, in San Jose, Costa Rica, May 23-27, 1999. This article presents research results during the first year of the project.

Gonzalez, Mario and Catherine Murphy. 2000. “Urban Agriculture in the City of Havana: A Popular Response to a Crisis” in Growing Cities, Growing Food. Eds. Bakker, Nico et.al., DSE, ZEL & Germany. pp. 329-347.

Gonzalez, Mario and Catherine Murphy. 2000. “Agricultura Urbana en la ciudad de la Habana: Una Respuesta Popular a la Crisis” in Ciudades in Crecimiento Cultivando Alimentos. Eds. Bakker, Nico et.al., DSE & ZEL, Germany. pp. 333-351.

This article, available in English and Spanish, provides an overview on UA development and evolution in the city of Havana. It gives concise information on UA characteristics,

organization, types of production systems as well as type of crops used in the different production systems, existing support services, challenges, and impacts of UA in terms of food security, employment and the environment. Well written and very informative, it situates the reader in the context of UA activities under special economic situations and the impact UA has had in Havana's political, legal, environmental and socio-economic spheres.

Project reports

Primer Informe Narrativo Parcial sobre el Proyecto "Evaluación de la Agricultura Urbana como Componente de la Economía Local en dos zonas de la Habana" (July 2000).

Bulletin/magazine articles

Cruz, María Caridad. 1998. "Resultados, problemas y retos de la agricultura urbana" in La Era Urbana, Vol. 5, No. 3, Invierno 1998, pp.viii-x.

Cruz, María Caridad. 2001. "Participatory planning in the City of Havana, Cuba" in Urban Agriculture Magazine. No. 5, December 2001, pp.23-24.

Gonzalez Novo, Mario. 2002. "Real Effort in the City of Havana Organic Urban Agriculture" in Urban Agriculture Magazine. No. 6, April 2002, pp.26-27.

Henn, Patrick and John Henning. 2001. "The Value of Urban Agriculture: the Contingent Valuation Method applied in Havana, Cuba" in Urban Agriculture Magazine. No. 5, December 2001, pp.49-50.

Pérez Leura, Ramón. 1998. "El Agua para Riego: Un enfoque sostenible sobre la agricultura en ciudad de la Habana". in Se Puede Vivir en Ecopolis. Año 3, No. 13, Junio 1998, pp.22-27.

"In other news" in The Urban Century. Vol. 2, No.1, Diciembre 1998, pp.15. Note: One paragraph bulleting article makes reference to the project.

"Revitalizing the Havana Metropolitan Park" in The Urban Century. Winter 1997, pp 1&15.

Other publications:

Field agenda, 2001. An interesting and simple agenda containing brief information on forest and fruit trees including their origin, uses and medicinal and hardwood properties.

I.3. Reuse of Wastewater in Agriculture, Cochabamba, Bolivia (00921)

Project Summary

This research activity took place in the city of Cochabamba, Bolivia. Originally, the duration of the project was three years, from September 1997 to 2000. Due to unexpected delays at the beginning of the project the activity was extended. However the culmination of extreme time delays, poor administration of the project by the recipient and unsatisfactory technical reports led to IDRC's decision to forgo the third payment and close the project in May 2002. Total budgeted cost for the project was 90,000 CAD. The recipient and executing agency was the Centro Regional de Accion Ambiental y Organizacion Social – CREAMOS (Regional Centre for Environmental Action and Social Organization).

This research project attempted to address two of Cochabamba's main problems: agricultural soil contamination and water scarcity. Initially, this research activity was a Latin American Urban Agriculture Network (AGUILA) project, whose overall objectives were to launch the executive secretariat and first program of network activities. However, logistical constraints experienced at the time resulted in the project becoming an activity on its own.

The main objectives of the project were to evaluate socio-economic activities of marginal settlements, promote local debate on government development policies and natural resource potential, and evaluate the potential of more sustainable systems and technologies to protect resources by engaging the population. Two other objectives were subsequently incorporated into the research. One was to define urban-rural development trends and identify mechanisms to reduce water and soil contamination for reducing impacts on human health. The second was to take the required action to actively engage local communities in the decision-making process.

The research was carried out in three stages. Results are only available from an environmental impact assessment and socio-economic survey conducted by the researchers. A summary of project results, objectives and impacts are presented in Appendix III.

Background

Cochabamba is the third largest city in Bolivia and is located between tropical and highland zones that exchange products and engage in important Atlantic-Pacific commercialization activities, mainly through the cities of La Paz and Santa Cruz. Cochabamba has a population of approximately 1 million inhabitants. Rural immigrants use the city as a temporary residence on their way to reach the wealthy lands of Chapare¹. These groups settle on marginal lands, usually either owned by the municipality or prone to natural physical phenomena such as flooding and landslides. When their attempt to move to Chapare fails, these individuals end up settling permanently in the marginal land of Cochabamba, where houses are hastily built. The economy in this segment of the population is mainly informal, and is accompanied by social problems like prostitution and theft. Other economic activities include land speculation and small-scale agriculture.

The main agricultural constraint in Cochabamba is the lack of availability of water and soil. The water problem has been an issue since the 1970s when the government of Bolivia and the UNDP began a 5 million dollar research project to assess the potential of underground water sources in Cochabamba. Five years later, the results demonstrated the limited capacity of the water sources without solving the needs of the population. In subsequent years, several private and public institutions started drilling wells to sell water.

In 1987, through a local institution, IDRC funded a 250,000USD program to assess the condition of underground water and the impacts of drilling. Results demonstrated the excessive presence of wells and pollution risks. The project contributed to capacity building among private and public institutions and opened new opportunities with other international donors. Regional IDRC initiatives like the Environmental Action Centres, had also addressed the lack of water in Cochabamba. Through these centres, it was possible to discern the absence of water management policies and to identify environmental parameters for the assessment of pollution risks.

The use of untreated wastewater for irrigation and the irresponsible use of agro-chemicals make agriculture in Cochabamba a dangerous activity for humans and the environment. The impact of contamination caused by these two activities is becoming increasingly evident in the south zone of the city known as La Maica. This area is considered urban-rural² and is characterized by poor marginal land, a high number of unemployed immigrants, a need for basic public services, and lack of environmental conscience and education among its population. Increasing demands for potable and irrigation water, and gradual climate change make it critical to aid poor neighbourhoods and communities from Cochabamba. It is expected that with the combination of local knowledge and modern technologies the residents will be able to address their problems and needs with innovative and simple solutions.

1 Coca production and intensive agriculture.

2 Lack of land use regulations

Objectives

The general objectives of this project were:

- General
 1. Define urban-rural trends in the marginal areas of Cochabamba, and identify how to reduce soil and water contamination through research mechanisms to reduce negative impacts in human health and food production.
 2. Involve local communities in socio-economic and environmental decisions that affect their lives, and achieve reasonable education levels and productive skills in the sustainable use of available water and soil resources.
 3. Evaluate the development of socio-economic activities in marginal settlements in Bolivian cities, more specifically, practices that affect the environment and quality of life in neighbourhoods and communities.
 4. Promote debate on government development policies from a local perspective, in particular the true natural resources potential that neighbourhoods can expand and exploit.
 5. Evaluate the potential of more sustainable systems and technologies in order to value and protect resources through local initiatives that involve individuals in productive activities at the household and community level.
- *Specific*
 - a. To evaluate the state of natural resources through an environmental impact assessment. This study will allow the establishment of policies and action that can be developed to improve actual conditions;
 - b. To produce and set up information for the promotion of scientific knowledge and action in the environmental conservation of La Maica;
 - c. Use scientific methods to measure the impact of agricultural activities in Cochabamba's underground waters;
 - d. To elaborate recommendations to minimize environmental impacts from on-going socio-economic activities;
 - e. To start, coordinate and support efforts to rescue traditional knowledge to be used in sustainable development knowledge models;
 - f. To recommend economical and efficient techniques in wastewater use;
 - g. To warn neighbourhoods and local communities of the negative impact of the excessive use of agro-chemicals;
 - h. To promote the efficient use of irrigation water in semi-arid climates through the implementation of local household and collective technologies;
 - i. To transfer knowledge on organic urban agriculture among neighbourhoods and small peri-urban communities;
 - j. To support and organize education programs for professionals, neighbourhood and community leaders to ensure the availability of adequately trained human resources in environment and rural-urban agriculture.

Methodology

This research project was carried out in three stages coinciding with yearly work plans. For stage 1 & 2 a comprehensive and detailed methodological framework was developed. However, the methodology for stage 3 consisted solely of a list of actions and activities to be carried out during that period. Although there is an obvious connection in methodology between the three stages it is not clearly stated or referenced in any of the existing documents. This lack of information makes it difficult to grasp a clear and concise picture of the methodological framework for the overall research. In the use of qualitative tools, such as structured interviews, the reports reveal what appear to be the interviewees' names. Such practice is not recommended in this type of research due to ethical considerations.

Stage 1: The methodology was carried out in seven steps. It was based on fieldwork and activities that assessed the physical state of the environment and the communities.

- Quantitative
 - Gathering of existing information such as maps, aerial photographs, soil information.
 - Demarcation of the area of study and selection of samples using maps, aerial photographs and field observations.
 - Characterization of the area of study that includes a detailed description of ecological conditions.
 - Selection of sampling points for water testing, collection of water samples from different sources³ for bacteriological analysis.
 - An environmental impact assessment (EIA) of the selected area of study to assess the damage caused by wastewater usage on natural resources between 1998 & 1999⁴. This is an exhaustive and detailed study that revealed the scientific orientation and expertise of the researchers. The EIA was a thorough activity done in two phases. The first phase consisted of extensive fieldwork and the second phase evolved around information support and data interpretation. Fieldwork activities involved field visits to assess the state of natural resources and use of support material (maps, aerial photos & mosaics).
- Qualitative
 - A survey using structured interviews with a rather small sample of 20 families to find out about general activities (not specified), education, housing, basic services and agricultural activities. The survey was also used to identify problems and location of sampling points for water testing.
 - A training workshop and information session for community members and their leaders, local associations and dairy farmers.

3 Different types of wells, treated and untreated watercourses, flooded areas and a watershed adjacent to Cochabamba's free trade zone.

4 Informe del 1er año del Proyecto Reuso de Agua Servidas en La Maica, Cochabamba, Bolivia – Documento de Trabajo; January 1999.

Stage 2: This stage was developed around an action-research methodology that used participatory tools and techniques to assess the impact of wastewater on human health. It was accompanied by an awareness campaign targeted at various sectors of the population⁵.

The tools included:

- Training sessions on technical aspects and problems for local stakeholders (dissemination of information, public debates).
- Training sessions on research and productive activities.
- Support activities to develop capacity and to preserve traditional practices.
- Promotion activities to support local sustainable initiatives.
- Participatory-action research through round tables, lobbying campaigns, and short courses.

Stage 3: The use of qualitative tools and techniques that will assist in the search of viable alternatives to make potable water sources safer.

The tools used include:

- Awareness through public campaigns and education, and the existence of a legal framework (ongoing).
- Education campaigns in water usage and preventive health measures.
- Seminars and meetings with local authorities.

Results

Among the few results available are laboratory analyses of water sources collected during the fieldwork and, EIA data and information regarding the study area. Consequently, most of the information presented in this section is based on a synthesis of findings organized during the research stage.

Research findings – stage 1: Conclusions based on results from field and laboratory work and EIA

- The main pollution agents of soils and water sources are: untreated surface water from rivers and canals and the irresponsible use of agro-chemicals and untreated wastewater for irrigation.
- Soil salinity is accelerated due to intensive untreated wastewater irrigation.
- Evaporation of wastewater is one of the main air pollution agents.
- Changes in forest cover (flora and fauna): the presence of salt resistant species and increase of aquatic plant communities in flooded areas and an increase in the population of aquatic birds.
- Increase in health problems due to vector diseases and microorganisms present in untreated waters.

⁵ Proyecto Agricultura Urbana: Informe Técnico Primer Semestre, Octubre 2000-Mayo 2001; October 2000 & Reutilización de Aguas Tratadas en Agricultura, Segundo Informe; received April, 2002.

Research findings – stage 2: Conclusions are based on structured interviews with 370 families.²¹ The survey in the first technical report was an emergency strategy used by the research team in response to the communities' lack of interest in the workshop and training activities planned for stage 2. Research findings are unclear. The survey data presented is somewhat brief and shallow, lacking analytical content of interviews and informal conversations. The analysis of information is based mainly on the number and percentages of individuals that responded to the questions asked during the interviews.

- Only a few individuals in the communities have access to potable water and public services (such as sanitation, garbage collection, electricity).
- The main economic activity is dairy farming and the cultivation of fodder.
- Individuals are more concerned with the health of their cattle than their own health.
- Communities do not trust offers made by the municipal government.
- According to a female informant, women do not have the time or interest to participate in environmental activities. This situation however, changes with time, as women are becoming increasingly interested in organizing as a group.
- Farmers use untreated wastewater to irrigate their crops, which are later sold in spite of the environmental sanitation office's regulations for the cultivation of vegetables in these areas.
- Individuals are reluctant to discuss the use of untreated wastewater for irrigation. The majority of residents seem to prefer to overlook the problems either because of lack of better alternatives or fear of losing access to markets for their products. People acknowledge the negative impacts of consuming food cultivated using contaminated water, but claim not to have a choice. However, as the project evolved there was an increased consensus among farmers and users as to the need to treat wastewater for irrigation use. There was also a marked improvement of organizational skills among farmer's organizations.
- A need for a more in-depth study of contaminated waters was identified. The greatest source of contaminated water is the untreated wastewater disposed of in the two main rivers (Rocha and Tamborada) and the faulty pipes from the sewer system. There is also illegal perforation of sewer pipes by some farmers to harvest water for irrigation and the increasing presence of detergent in natural water sources.
- There is a continued increase of soil salinity due to wastewater irrigation and irresponsible soil management activities. Historical data shows that excessively saline land has increased from 154 Ha in 1945 to 507 Ha in 1997.
- The institution in charge of water supply and treatment (SEMAPA)²² does not adequately treat heavy metals. However, the institution is interested in improving the quality of services and is seeking credits for this purpose.
- An increasing need for public awareness at all levels was identified. Progress on this front included consensus on the need of a legal framework and more integral approaches to face contamination problems.

²¹ Described in the first technical report and information from the second technical report presented to IDRC

²² Servicio Municipal de Agua Potable

Project outcomes

- The workshop “Environmental Pollution Caused by Wastewater Use in Agricultural Activities”.
- Planning and holding of a multi- stakeholder seminar on the reuse of treated wastewater, including a roundtable on the risks posed by the reuse of contaminated water.
- Two workshops for local leaders were organized with the collaboration of international and local NGOs. The main topic of the workshops was “Contamination problems in water – Strategies.
- Working meetings about contamination of water resources and the utilization of reduced (marginal) areas for vegetable production in solar tents with 6 families from communities south of Cochabamba.
- Eight field visits to communities within the area of study.
- Several meetings with government and private institutions, international aid agencies and community organizations working in the area to discuss co-operation agreements.
- The publication of two booklets on Law 2029 – Privatization of Water Services and Alternative Proposals. The booklets also discuss what affects irrigation farmers the most and the environmental problems of the zone.
- Three technical reports.

Impacts:

The project had impacts in the following areas:

Human resources development

- Several working meetings organized by CREAMOS with communities south of Cochabamba benefited from the project. Meetings evolved around the contamination of water resources and the utilization of reduced (marginal) areas for vegetable production in solar tents. The activity involved experiments with six families that experienced the benefits through improved diet and household economy.
- Neighbourhood leaders were educated through meetings and environmental training courses about the need to improve water use and proper disposal of wastewater.
- The workshop “Environmental Pollution Caused by Wastewater Use in Agricultural Activities” was delivered to peasants, municipal and community leaders and dairy farmers, with a total attendance of 30 people. With the research team’s participation, this activity has established the basis for open dialogue to discuss local problems.
- 53 people from 22 different non-governmental and community organizations and 11 local producers attended the multi-stakeholder seminar on the reuse of treated wastewater.
- Local leaders attended the two workshops on “Contamination problems in water – Strategies”.

Institutional capacity building

- The active participation of the municipality, community and farmer's organizations, and research institutions was of key importance for the first phase of the project.
- Gaining experience with regards to administering the operational costs of conducting fieldwork and contracting of specialized services.
- Established working relationships with government institutions.

Effective partnerships

- The municipality of Cochabamba provided the research team with relevant information about the Urban Management Plan for the city.
- Field visits to communities within the area of study enabled first contact with farmers. However, local producers were reluctant to engage in conversations and supply information to researchers at the beginning.
- Meetings with government institutions, international aid agencies and community organizations to discuss co-operation agreements helped to identify the issues and facilitate discussions between antagonistic parties²³.
- The multi-stakeholder seminar resulted in the establishment of an Analysis Group on Water Contamination and Possible Solutions, which is endorsed by a Member of Parliament, water and non-governmental organizations, and CREAMOS.
- CREAMOS' local prestige was heightened and the organization was invited by SEMAPA to participate in a process to resolve requests for greater access to wastewater by different farmers groups competing for this scarce resource.
- Through meetings with local and central government institutions, community leaders and SEMAPA, CREAMOS prepared and encouraged the signing of a collaborative agreement between SEMAPA and the National Irrigation Office No. 1.
- In collaboration with CODAC and the Parliamentary Brigade, a draft proposal was elaborated for the recovery of the Rocha river watershed and was being discussed in Congress.

Gender focus

- In the diagnostic study, more women were interviewed than men since they were more likely to be home at the time of the interview.
- Approximately 10 women from various activity levels registered for the workshop on Environmental Pollution Caused by Wastewater Use in Agricultural Activities.

²³ Three community leaders and SEMAPA

Contribution to multi-disciplinarity

- The multi-disciplinarity of the research team made possible the analysis and realization of tasks from legal-political, technical and socio-economical perspectives. However, the sociological aspects were weak and could have been enhanced through the incorporation of a full time sociologist and rural extension workers on the team to improve co-operation between the researchers and communities.

Scientific and methodological advances

- Democratization of analysis and new ways of perceiving problems and identifying solutions. The methodology used permitted the identification of the key local actors.

Research results utilization

- It was expected that results from the diagnostic study of the research area would be analyzed and discussed by local and regional institutions, to elaborate plans and programs related to the objective of the project.
- CREAMOS studied a set of possible needed actions (short and mid term) to address several problems that were to be brought forth during a roundtable discussion. These actions were oriented towards greater community awareness, participation and training activities; development of university research programs and inter-institutional collaboration.

Negative impact: With the exception of two workshops, none of the actions proposed were successful due to bureaucratic impediments and absence of staff from academic institutions.

Fund leverage

- During the first stage of the projects the only additional type of contributions were in kind from individuals and institutions. Those funds assisted in the implementation of the first workshop and elaboration of workshop material, along with water analyses and cartographic information.
- *Negative impact:* CREAMOS submitted a project proposal to the central government; unfortunately it did not get support because of the lack of interest from the communities.

Lessons Learned

1. It is worth noting that the research team's success in the analysis of the soil and water contamination is attributed to the members' solid background on these topics. The success of the project, however, could be jeopardized by the lack of a legal framework in environmental management, the imposition of local economic models that further aggravate poverty in marginal communities and inter-institutional rivalry between local and regional institutions.
2. The scarcity of water in Cochabamba is a natural occurring phenomenon, which has been aggravated by the increasing demands of the growing urban population. This situation has resulted in the politicization of this vital resource, generating conflict between stakeholders and deterioration of natural resources (soils, forest and water). Through this project, CREAMOS played a catalytic role by adapting and redefining project activities to the needs

and interest of stakeholders involved. It was deemed important to invest more time and effort in lobbying activities as originally envisioned.

Publication List and Brief Review

To date this research activity has produced a total of three technical reports and two booklets. Local papers have published several newspaper articles directly related to the research topic; these articles are included in the annexes of the second technical report.

Project reports

- Proyecto: IDRC – CREAMOS. Reuso de Aguas Servidas en Agricultura Urbana: Documento de Trabajo, Cochabamba, Enero de 1999.
- Proyecto Agricultura Urbana: Informe Técnico Primer Semestre, Octubre 2000-Mayo 2001, Cochabamba, Bolivia.
- Reutilización de Aguas Tratadas en Agricultura: Segundo Informe. Centro Regional de Acción Ambiental y de Organización Social, Cochabamba, Bolivia; undated (received April 30, 2002).

The first progress report – a working document presented to IDRC - is well organized, easy to understand and yet highly technical. The main content of the document evolves around the methodology used in the assessment of environmental impacts in the area of study. The document presents interesting information on the different types of water sources in the area. It identifies the contamination levels and agents and discusses the risks to human health.

The last two reports are quite brief. The document: “Informe Técnico Primer Semestre”, presents information on a socio-economic study of the five neighbourhoods and communities in the study area. The information provided is limited, as it mainly gives an account of socio-economic activities.

The second report describes events that occurred at the local and national level that had an impact on the project. Results of proposed actions from the previous report are also presented. The annexes present an extensive list of minutes from meetings, letters and agreements. Overall, however, the information in both documents does not flow. Extra effort has to be made by the reader to associate objectives with results and impacts.

Book articles

Ricaldi, Victor. 1999. “Reuso de Aguas Servidas en Agricultura, Cochabamba, Bolivia.

Impactos del Proyecto”, in Agricultura Urbana en América Latina y el Caribe: Impactos de proyectos de investigación. FLACSO & IDRC – Canada, pp.29-36

This article originated from the workshop, “Researching the Development of Urban Agriculture in Latin America and the Caribbean: Balance and Optimization of Projects’ Impacts”, in San Jose, Costa Rica, May 23-27, 1999.

Booklets

- Legislación del Agua en Bolivia

Cartilla 2: Los Principios que Rigen la Prestación de los Servicios de Agua Potable y Alcantarillado Sanitario, Cochabamba, Bolivia. IDRC & CREAMOS.

I.4. Urban Horticulture Technologies in the Cities of Port-au-Prince and Gonaives, Haiti (03152)

Project Summary

This research activity took place in the cities of Port-au-Prince and Gonaives in Haiti. During its three years of existence, this multi-donor pilot project received funds from CIDA through CARE-Canada (255, 000USD), IDRC (113, 345USD) and CARE-Haiti (122, 640USD). The recipient and executing agency was CARE-Haiti. The overall objectives of the pilot project were to address the needs of Port-au-Prince shantytown residents; to improve their diet, develop income-generating activities, and provide a cleaner environment. Through the development of specific objectives and linked activities, the project explored the levels of motivation required for communities to adopt UA intervention strategies. General objectives also aimed at raising awareness of UA among institutions working in the field of agriculture. The pilot project's strategy was based on clear development objectives for the project zones. Project activities made exhaustive use of qualitative research methods. A summary of project results, objectives and impacts are presented in Appendix IV.

Background

Haiti is the poorest country in the western hemisphere. The average income per capita is \$US250/year, one of the lowest in Latin America & the Caribbean. Approximately, 80% of Haiti's rural population lives in poverty, 50% of the population under-five years of age suffers from malnutrition, and more than half the population is illiterate. The population growth is 200,000 persons per year with a fertility rate of 4.8 children per woman, nearly twice as much as the 2.8 recorded in the region. Rural areas lack infrastructure and small farmers do not have access to credit. Difficult living conditions in these areas have led to an exodus to more urbanised areas including the capital, where there is better access to public services.

The rural population that migrates to Port-au-Prince establishes itself in marginal areas, which later evolve into shantytowns. The capital is surrounded by many of these settlements that are characterized by extreme poverty, insalubrious conditions, and violence. A 1997 survey conducted by UNDP in three shantytowns²⁴ showed that two-thirds of families and residents live on \$US25.00 a month. Furthermore, a baseline study carried out by CARE for this pilot project showed that the diet of shantytown residents is very high in carbohydrates; 36% of families interviewed eat only one meal a day and 48% has only two. The rapid demographic increase in shantytowns and the continuous exodus from rural areas are placing considerable pressure on limited urban resources. Added to these problems is the lack of employment opportunities, forcing some residents into economic activities like pawning of goods and prostitution.

²⁴ Tokyo, La Saline & St. Martin.

Before 1995, CARE-Haiti programming priorities focused on urban food programs with schools and the popular sectors. Some of the activities were food for work programs with marginal communities. From these programmes, urban horticulture (UH) and stove improvement projects were also developed. UH was considered a feasible alternative to address food security problems by contributing to the food needs of families. It was also regarded as an opportunity to generate income through the commercialization of products in local markets. Likewise, agricultural activities were expected to contribute to organic waste management in households and the production of compost for gardening.

Objectives

- General

The general objectives of this project were:

1. The introduction, transfer and adoption of long-term horticultural production technologies in selected areas of Port-au-Prince; and
2. The management of solid and liquid waste in the areas selected. In three years, the project is expected to have in place an environmentally friendly, institutional and technical support system for UH.

- Specific

- a. To improve the capacity of community structures to support UH activities;
- b. To strengthen the competency of project extension staff, facilitators and participants;
- c. To identify, test, demonstrate and disseminate locally appropriate UH technologies²⁵;
- d. To identify income-generating activities through UH practices that will stimulate the creation of small business and to increase employment opportunities for shantytown residents;
- e. To raise local residents' awareness in project areas about the need to collect waste in order to improve personal hygiene and environmental sanitation;
- f. To instruct how to establish and operate small-scale composting facilities for biodegradable solid waste;
- g. To use compost and wastewater in horticultural production, and
- h. To significantly increase the potential of urban agricultural production through the expansion of cultivation areas.

Methodology

This pilot project made exhaustive use of qualitative research methodologies and participatory appraisal tools. Project activities were carried out in two phases and took place in the following order:

Phase 1 – selection of project areas, establishment of contacts and baseline study.

²⁵ Isolated growing media technologies (pots, tires, etc.), small-scale bio-intensive gardening, and optimum use of limited water.

Phase 2 – demonstration plots, dissemination, training and education, research, monitoring and evaluation.

- *Phase 1*

Selection of project areas

The UH project was initiated in two shantytowns of Port-au-Prince, Mapou/Fon brach (the zone of Fontamara) and Cité Siclait (the zone of Delmas 31). The project areas were chosen from a pre-project selection list of shantytowns. Field visits to the pre-selected areas enabled the team to make a quick selection based on the following criteria:

- availability of usable spaces and water;
- residents' initiative and motivation;
- practice of UA activities; and
- involvement of local organizations.

The existence of a Communal Administration Council willing and motivated to support the project was also considered in the selection process.

During the life of the project, 16 shantytowns from Port-au-Prince and 3 from the village of Gonaives either adopted UH activities or were incorporated into the program.

Contact development

This activity was based on two different levels of partnership:

- Formal partnerships: established with four local community development organizations²⁶ that work directly at the grassroots level. The development plans of the four organizations included urban and peri-urban agricultural activities, health, and the creation of small-scale economic activities, literacy, and agricultural development and infrastructure rehabilitation. The main task for these organizations was to provide project participants training in their area of expertise and disseminate UH programs and techniques. The project included funding for facilitators' salaries; follow up activities; purchase of equipment and material and administrative support.
- Informal partnerships: included 8 local community development NGOs, which participated in training and dissemination activities of the project. Informal relationships were also developed with the Conseils d'Administration des Sections Communales – CASEC (Communal Administrative Councils) from three project areas.

Baseline study

The objective of the baseline study was to raise awareness regarding UH among main target groups such as women, children, and under-employed residents from shantytowns. The study collected information about the socio-economic characteristics²⁷ of family units, food habits,

²⁶ Haiti-Gardens/ODEJHA, Children Aid Direct-CAD, L'Organisation des Jeunes pour le Développement d'Haiti-OJEDH, L'Organisation Mains Contrées pour La Vie-OMCL.

²⁷ Number of people by household, education, distribution of population by age, sex and economic activity.

water and fertiliser availability for community agriculture, as well as the shantytown residents' access to health, education and food aid services.

Phase 2

Scaling out

The outreach of the project was achieved through a series of linked activities that included:

Demonstration gardens

These were used as a tool to raise awareness and convince potential project participants. These gardens were used to show participants production techniques and the feasibility of establishing food gardens in an urban environment. Old tires were the most popular planting container, followed by bamboo baskets and terracotta pots. The gardens were established on roofs, in back yards, on roof racks, walls, in fenced plots and houses under construction. A series of parameters (plant species used, location, type of containers, substratum, maintenance and fertilisation), and production techniques were established ahead of time to facilitate the evaluation of project impacts.

Establishment of vegetable gardens

This strategy involved “learning by doing activities” with interested groups. The UH project worked with 68 groups totalling 1,100 persons (613 females & 487 males). Group facilitators provided technical assistance, assessed garden locations, and advised on the types of material or information to be collected. The criteria used to select the space for establishing the garden included location, sunlight, soil and water availability and security. Participants were provided with organic fertiliser (cattle and horse manure), fast growing vegetable seeds (beets & Swiss chard) and containers (tires, bamboo baskets & pots) when necessary. Two types of vegetable gardens were established in the project: family and group gardens. The final project evaluation listed 238 functioning gardens that provide for 847 families, which represent approximately 5,130 persons (average of 6 persons per family).

Tree nurseries

This activity involved the training of two local NGOs in the establishment of fruit tree nurseries to supply seedlings and saplings to encourage agro-forestry practices.

Composting

This activity was included as part of market-gardening training and was carried out with participants in gardening areas. Each participant produced his/her own compost. Through this activity participants were able to identify problems and their solution, for instance in pest control.

Input outlets

The input outlets were created upon the request of the organization and involved training on small business management.

Training

Training was provided to local participant organizations and the project team. Participatory methodologies were used during training sessions, such as, action-research, reflection exercises, field visits and technical demonstrations. Training sessions were provided to groups of approximately 15 persons.

Visual material, and facilitators that played a catalytic role during debates and discussions in turn provided fuel for discussion during the reflection sessions. “Action-research” sessions evolved around participants’ observations and results extrapolation. Local organizations were trained on small enterprise development, dripping irrigation, participatory training and leadership, action-research learning, nursery techniques and preparation of financial reports. The FAO “Group Enterprise Resource Book” was used as a topic guide for some of the training sessions. Training sessions were given by organizations with expertise on the topics to be covered. For example, CARE-Haiti was responsible for the session regarding community participation and leadership.

Research

Participatory and formal research methods were used in this pilot project. The Care-Haiti team adopted these methods and for the first time beneficiaries assisted the team in establishing the technical, strategic and organizational aspects of the project. Formal research methods were used to improve production techniques, to evaluate strategies and adaptation of plant species to sub stratum used, to perform soil analyses and to prepare potting soil mixtures.

Monitoring and evaluation

The guidelines used in monitoring and evaluation activities were established with the help of the CARE-Haiti evaluation officer. The objective of this step was to evaluate the impact of the project on the participants’ livelihoods and on their environment, to generate data to be used in the final evaluation of the project. The data generated from this activity was to be also used for the replication of the project in other areas of Port-au-Prince and the country. Follow-up activities to assess project impacts were implemented on a monthly basis. The main evaluation activities were carried out in four steps: (1) a mid-year evaluation was conducted in the first year of the project to collect participants’ opinion through group’s interviews; (2) Case studies were performed using qualitative and quantitative tools to ensure the validity of adopted techniques; (3) A mid-term evaluation was conducted using participatory appraisal tools (focus groups & semi-structured interviews) to assess project impacts; (4) A final external participatory evaluation was planned to determine the impacts of the UH activities on the lives of the participants and draw lessons learned and recommendations for future projects.

Results

The study resulted in the following:

- A baseline survey used to assess and select project zones in Port-au-Prince.

- The project demonstrated that technically, it is possible to produce highly nutritional food in spaces that have never been used for this purpose. Food production is possible with the introduction of new horticultural techniques adapted to the special physical conditions and available resources of shantytowns. The adoption of those techniques resulted in the establishment of 238 urban vegetable gardens, improvement of family diet, and diversification of income by generating economic activities such as the sale of surplus compost.
- The 238 gardens were supplying food to 242 households reaching 1501 individuals, of whom 179 were children aged 5 or under. Also, through the commercialization of surplus production each garden, indirectly, supplied the needs of two or three families servicing approximately 605 households or 3630 individuals. Altogether, at varying degrees the 238 gardens were supplying food to 847 households or 5130 individuals. Four rooftop gardens produced gross annual incomes of approximately 10USD/m², with higher returns over longer periods of time. Swiss chard proved to be the most economic crop (high yield, low input needs).
- One of the most important objectives of this project was to demonstrate to shantytown residents the benefit of community participation in the improvement of their living conditions. Agendas for training sessions were prepared in an interactive way allowing participants to identify topics of interest.
- 244 participants from Port-au-Prince were trained through this project. Participants were between the ages of 16 & 45, and possessed diverse occupational backgrounds ranging from small entrepreneurs, paid qualified and non-qualified employees, students, unemployed persons and artisans. A great number of participants were women.
- Income generating activities that were created by the project include the sale of vegetables and compost surpluses, establishment of input outlets, small-scale compost enterprises and tree nurseries.
- The creation of the local network Coordination des Organisations pour le Développement de l'Agriculture Urbaine – CODAGRU.
- The participation of school children in the project also had an impact on household diet and knowledge transfer between children and their parents.
- Production of training manuals based on participatory methods and the publication of the UA marketing manual from FAO in Creole.
- An unexpected result of this project was the transfer and diffusion of new horticultural technology knowledge to rural areas. Participants of rural origin returned to their villages and shared their knowledge by training friends and family.
- The final participatory evaluation of the UH Project was carried out by INTELL CONSULT. A total of 247 beneficiaries participated in the evaluation among them 148 women. Twenty-six group interviews took place in Port-au-Prince and Gonaives. Results of the evaluation demonstrated:

- the satisfaction of the beneficiaries in relation to the intervention, particularly: the introduction, transfer and adoption by the population of appropriate technologies for horticultural production in the urban environment;
- the project beneficiaries were satisfied with the introduction of vegetables in their diet;
- increased food security in households;
- the various project activities introduced new ways of social interaction resulting in improved solidarity among the participants and a stronger sense of community;
- increased self-esteem of female participants;
- generated income to purchase other food items to complement their diet;
- changed individuals' attitude toward waste management and composting; and
- increased the number of urban horticulturists.

Impacts:

The project had impacts in the following areas:

Human resources development

Project team

- The CARE-Haiti team became skilful on the different applied techniques in UH and, as a result, is now able to work more efficiently at the urban environment level.
- CARE-Haiti staff participated in training sessions on drip irrigation that were provided by a private firm with specialization on the topic.

Beneficiaries

- Waste management and compost utilization activities in vegetable production improved environmental conscience among participants. Individuals' attitude towards their environment is progressively changing.
 - A total of 1,100 individuals (613 females & 487 males) in 68 groups participated in training sessions on the establishment and operation of urban gardens. The participants had several opportunities to experiment, explore and adapt techniques to their own situation. Six hundred and twenty nine of the 1,100 individuals were evaluated. Among them, 218 of 391 females successfully passed their evaluation and were certified.
 - The project supported two local NGOs in the establishment of agricultural input outlets.
- Negative* – However, the didactic support used during the training on this type of activity did not match the literacy level of the participants. In future sessions more visual methods are recommended.
- During training sessions, participants were given the opportunity to select other topics of their interest. Topics included: comparison between the use and composition of manure and compost; beneficial and noxious insects; natural pest control; crop rotation and companion planting.
 - Twelve individuals (9 females & 3 males) representing 6 local organizations received training about the nutritional value of vegetables. The Haitian Institute on Community Health gave training sessions on the topic.

- Nineteen individuals (9 females & 10 males) from two local organizations participated in training sessions about production in tree nurseries.
- All participant organizations were trained on expense classification and preparation of financial reports.

Institutional capacity building

Project team

- This project was the first of a group of six agricultural projects from CARE-Haiti that applied participatory tools and techniques through action-research activities. This methodology became the model for dissemination strategies used in other CARE-Haiti agricultural projects.
- All project activities were executed with existing local organizations including local organizations that evolved through other CARE-Haiti projects, school groups, community leaders and members, and community committees.
- The team developed several tools for the follow up and evaluation steps of the project, among these were evaluation forms, calendars, learning booklets, and a list of the gardens that were established.

Beneficiaries

- Project participants also gained skills in the production of compost. A small group of participants was able to produce 10 bags of compost on their premises. Four organizations expressed an interest in producing compost for commercial purposes. However, only the local organization KIJEP (Komite Inyon Jen Pwogresis) began the production of compost at a commercial scale (30 bags produced at the beginning). By the end of the project, KIJEP was in the process of negotiating a contract with a local company for the production of compost.
- Reinforcement of local organizations that participated in the project further strengthened existing networks. The majority of these organizations have achieved a competency level that will allow them to continue UA activities individually.
- The partnership approach proved to be an effective sub-funding system, clearly reinforcing their management/administrative capacity. The organizations' exposure to this approach will assist them in better planning, training, and negotiating skills therefore strengthening their institutional capacity.

Effective associations and local partnerships

- The participatory approach led to the establishment of solid bases for future development activities with shantytown residents. This implementation strategy helped residents develop a sense of project ownership that contributed to its overall success.
- Formal partnerships between CARE-Haiti and four local organizations²⁸ were established. These formal partnerships were critical in enabling the project to meet its objectives and

²⁸ Haiti Gardens-ODEJHA, Children Aid Direct, Organization de Jeunes por le Développement d'Haiti-OJEDH, Organization Mains Contrées pour la Vie/Organizasyon Men Kontre pou Lavi –OMCL/OMKL.

facilitated dissemination of project activities in Port-au-Prince and Gonaïves. By catering to demands from schools, the project was able to increase the number of families exposed to UH technologies. Moreover, informal partnerships were arranged with eight local organizations²⁹ and the Conseils d'Administration des Sections Communales (CASEC) in project areas.

- Local organizations associated with the project have created the network CODAGRU. The network intends to pursue and diversify activities in UA. Partner organizations that participated in the project continue to supervise, cultivate food and produce compost beyond project closure.
- Working relationships were developed with local government institutions and individuals. Efforts were made to bring together the Mayors of 5 villages³⁰ and the Urban Management Program from UNDP-HABITAT. The project team exchanged information with international representatives in Haiti³¹, and made field visits to project sites.
- The inclusion of the project in activities organized by central government institutions³² has provided public recognition and has positioned it as a potential participant in other activities. There has been exchange of documents with the international research institution "Centre de Recherche et de Documentation Agricole" (CRDA), who has expressed interest in sharing knowledge with the different departments of the Ministry of Agriculture about project related impacts and results.
- The project established contacts with international and regional networks such as the Support Group for Urban Agriculture (SGUA) and the AGUILA Network. Through the AGUILA Network, the team was able to exchange information on different topics and projects of similar nature in Latin America and the Caribbean region. The project was also represented in the second Assembly of AGUILA members and the evaluation of UA projects organized by IDRC in San Jose, Costa Rica (1999). Information has also been exchanged with the US based organization "Educational Concern for Hunger" (ECHO).

Gender focus

- The gender component was an important aspect in project design, implementation and evaluation. Results showed that 68% of the gardens established belong to women.
- Women played a significant decision-making role in gardening activities in their homes and communities, thus becoming the main catalytic agents in the project. On the other hand, the role of men was usually limited to setting up the garden. The project also reinforced self-esteem among women by stressing participants' responsibility and achievement of individual success.
- *Negative:* Although women were the main target group and beneficiaries of the project the research team had not considered including a gender specialist in the project.

²⁹ KIEJEP, OJEPORÉB, OSJDN, KOTESH, COFA, FODESEV, PHD, ODSG.

³⁰ Port-au-Prince, de Delmas, de Carrefour, de Pétion-Ville and Gonaïves.

³¹ IADB, UNDP, FAO, UNICEF & l'Unité d'Appui aux Programmes Canadiens (UAPC).

³² Ministry of Agriculture, Social Services and Environment.

Contribution to multi-disciplinarity

- The research team was not multi-disciplinary; as such the team's capacity to intervene in areas other than agriculture was limited. However, consultants were hired to bring balance to some of the project activities.

Scientific and methodological advances

- The training methodology was based on learning by doing techniques, giving participants the opportunity to discover basic production principles.
- The introduction of new horticultural techniques adapted to specific conditions of irregular settlements, using locally available materials and human resources.

Relative use of research results

- The project team along with members of local organizations prepared a training manual that included sections of the FAO commercialization manual in Creole. The manual was used by project beneficiaries and addressed a number of issues including the nutritional and economic value of fruits and vegetables, impact of UH activities on the environment, waste management and plant physiology.
- As a result of this project, special studies were commissioned on composting, mushroom cultivation, training and management.
- Increased interest among residents and community leaders from other shantytowns resulted in the replication of project activities in other areas of the capital. Project areas grew from two in 1996 to sixteen in 1999 in Port-au-Prince, and from one to three in the village of Gonaives.
- CARE-Haiti experience and documentation of this process has become a source of information for CARE International offices in Zimbabwe and Afghanistan, and other local organizations.

Fund leverage

- In addition to the IDRC grant (113, 345USD), the project received 225, 000USD grant from CIDA through CARE Canada, a contribution of 122,640USD from CARE Haiti, plus 122, 640USD from other sources totalling 490,885USD (746, 145CAD). The CIDA grant for material requirements and IDRC's grant for research and training were complemented with additional funding from other sources. Eventually, this enabled the project to grow in scale and to be replicated in other areas of Port-au-Prince and Gonaives. The project later evolved into a program within CARE-Haiti. However, according to CARE-Haiti this program and other programs from other development organizations were discontinued due to interruption of external funding linked to the country's political instability.

Lessons Learned

This UA project was a pilot project that attempted to introduce new technologies and a high level of community participation in the poorest areas of Port-au-Prince. The lessons learned during this three-year project include the following:

1. Too much emphasis was given to improving technical capacities. More emphasis should have been placed on improving management capacity and resource mobilization. Project beneficiaries should have been made to be less dependent on CARE and should have had more help in developing a business plan.
2. The fruit tree nursery production and distribution activities were a success in terms of knowledge transfer in the production and distribution activities of fruit-tree nurseries. However, this activity was weak from a business and commercialization perspective. In the future, it is recommended that the demand be clearly defined and quantified before production activities are initiated.
3. The project team was small and lacked multi-disciplinarity. Nearly all members were agricultural professionals. On the one hand, this factor contributed to the development of technical aspects of the project. While on the other hand, results in institutional capacity building and community development were limited, as was a better understanding of economic implications on agricultural recommendations.
4. In the future, the lack of horticultural production techniques could be addressed by establishing links with the Centre de Recherché et de Documentation Agricole (CRDA) and the Faculty of Agriculture, and encouraging research in horticultural production techniques for confined spaces, including type of production and species yields.
5. Some of the deficiencies expressed above are consequences of the timeframe established for the pilot project. Most problems could have been solved in a follow-up phase. The three-year cycle was too short to fully introduce new technologies and expect them to have high adoption levels among participants. A pilot project should, at least, have the ability to count on financial support for either a consolidation phase or a second phase. Pilot projects without a second phase should be avoided to counter disappointment among participants. The local partners need additional time to become more self-sufficient so as to ensure that projects are sustainable.

Publication List and Brief Review

Project Reports:

Régis, Mildred D., et al. 2000. Rapport Final: Projet Horticulture Urbaine. CARE-Haiti.

This 74 page final report is a complete and detailed account of activities and final results of a 3-year pilot project in Urban Horticulture with residents from 16 shantytowns of Port-au-Prince and 3 from Gonaïves. Highlights of the report can be found in the sections on methodologies and implementation strategies used for each of the activities outlined in the objectives. The report is well illustrated with colour pictures depicting the locations and different types of vegetable gardens established. Detailed information is given on types of substratum, containers, species, and light and water requirement for each type of garden. Interesting data is also provided on yield and profits obtained by species and area used. The report explains how the project contributed to institutional strengthening of several actors, including CARE-Haiti. It

closes by documenting impacts achieved by the end of the project, both intended and unforeseen, draws conclusions and makes some recommendations. The report has six annexes that include maps with project sites, a list of local organizations interested in Urban Horticulture, table of vegetable species yield in tires, lists of members for the SGUA and AGUILA Network, and a list of documents published by the project.

- Annual Project Reports for 1997, 1998 & 1999 by Mildred D Régis.
- Mid-year Project Reports for 1998, 1999 & 2000 by Mildred D Régis.

Other documents

- Fénélus, Philinel. 1998. Etude de cas de production (quantitative). CARE-Haiti, Port-au-Prince.
- François, Wasmith. 1998. Essai de mise en culture des champignons, étude des pratiques de paysans de Mombin Crouchu et ensemencement. CARE-Haiti, Port-au-Prince.
- Intell Consult. 2000. Analyse d'implantation du projet d'Horticulture Urbaine. CARE-Haiti, Port-au-Prince.
- Intell Consult. 2000. Evaluation participative du projet Horticulture Urbaine. CARE-Haiti, Port-au-Prince.
- Lamur, Claude. 1999. Essai sur substrats de culture. CARE-Haiti, Port-au-Prince
- Lamur, Claude. 1999. Etude de cas de production (quantitative). CARE-Haiti, Port-au-Prince.
- Lamur, Claude. 1998. Essai sur substrats de culture. CARE-Haiti, Port-au-Prince.
- Langlais, Tamari. 1998. Guide de fertilisation pour la culture des légumes. CARE-Haiti, Port-au-Prince.
- Langlais, Tamari. 1997. Guide sur les substrats pour la culture des légumes. CARE-Haiti, Port-au-Prince.
- Monnet, Marguerite. 1999. Consultation en formation en gestion à la base, pour le projet d'Horticulture Urbaine, partie II. CARE-Haiti, Port-au-Prince.
- Régis, Mildred D. 2000. Enquête quantitative de base du projet Horticulture Urbaine. CARE-Haiti, Port-au-Prince.
- Régis, Mildred D. 2000. Atelier de travail sur es objectifs du projet pilote Horticulture Urbaine. CARE-Haiti, Port-au-Prince.
- Régis, Mildred D. 1999. "Horticultura urbana en Haiti" in Agricultura Urbana en América Latina y el Caribe: Impactos de proyectos de investigación, pp.73-86. FLACSO, San José, Costa Rica.
- Régis, Mildred D. 1997. Atelier de formation sur l'apprentissage par découverte. CARE-Haiti, Port-au-Prince.
- Régis, Mildred D. 1997. Manuel de formation Horticulture Urbaine. CARE-Haiti, Port-au-Prince.
- Véa, Dieudonné Jean. 1998-1999. Rapports de suivi sur la culture du champignon comestible. CARE-Haiti, Port-au-Prince.

On-Line documents

Eberlee, John. 1999. "Urban gardening in Haiti". IDRC, Ottawa. <http://www.idrc.ca/reports/>

Régis, Mildred D. 1998. "Urban Horticulture Project". Port-au-Prince. Cityfarmer.
<http://www.cityfarmer.org>.

I.5. Urban Agriculture in the Region Metro Fortaleza, Brazil (002748/002749/403764)

Project Summary

Urban agriculture (UA) activities in the city of Metro Fortaleza in Northern Brazil have been supported by IDRC through three related activities: (1) Survey Lessons and Recommendations (002748/31, 79,000CAD); (2) UA for Sanitation and Income Generation (002749/33, 000CAD); and (3) Up-scaling UA – From Experiments to Programs (RSA 403764/55, 000CAD). The duration of all activities was 2 1/2 years, the first one started in 1996 and the last ended in 1999. The total cost of the activities was 119,790 CAD. The recipient and executing agency for the first and last activity was the local NGO, CEARAH Periferia, while the recipient and executing agency for the second activity was the French NGO, GRET Urbano. However, in all three activities both organizations cooperated closely with each other. Other collaborators were the Department of Geography of the Federal University of Ceara, local researchers and the private company ZENITH. The main objectives were to document UA practices, generate income and treat household wastewater, implement viability studies for the launch of pilot projects and to build on the current momentum to establish a metropolitan program for UA. In general, project activities attempted to address socio-economic and environmental degradation problems among Fortaleza's slums. A summary of project results, objectives and impacts are presented in Appendix V.

Background

Metro Fortaleza encompasses an area of 3,485Km² and is the capital of Ceara State located in the Northeast region of Brazil. The city has a population of 2.5M people, which represents 36.8% of the total population of Ceara (less than 6M; 1999 census). While 70% of families in the city earn less than 150USD a month, 40% of urban Fortaleza remains undeveloped. Hunger in poor neighbourhoods of Metro Fortaleza is rampant. Added to this problem is the increasing degradation of the environment and depletion of natural resources. The city has numerous water resources (rivers, creeks and lagoons) that have been contaminated by urban wastes. The water table is heavily polluted and Cholera has been endemic for years.

In 1973, the number of slums (favelas) in Metro was 87. Since then, they have grown at a rate of one per month. The exponential growth of slums in the city has resulted from the rural exodus caused by continuous draught. It is estimated that 28% of Fortaleza's families live in slums, which are characterized by a lack of infrastructure, precarious basic services, poor housing, a lack of land use regulations and community structure. The population, mostly rural immigrants, is illiterate, unemployed and with limited access to food and health services.

The continuous migration from rural to urban areas marked the beginning of UA in Fortaleza, where activities such as vegetable gardening and fruit-tree planting on sidewalks are widely practiced. These activities play an essential role in people's survival. Fortaleza, like many other

cities of Ceara, is distinguished by extensive green belts resembling natural forests, including gardens for household consumption, livestock raising (cows, pigs, horses, chickens and donkeys), medicinal plants and fruit trees. However, the most popular and documented activity is kitchen gardening with small-scale livestock rearing. Data from a 1992 agricultural census showed that 90% of the pigs raised in Ceara households were fed with household organic wastes. Rural areas no longer exist in Fortaleza since all land is officially considered urban except for some areas that are regarded as peri-urban, and are dedicated to cattle and pig farming. Ceara's culture is strongly based in rural traditions that are evident in food habits, religious gatherings and celebrations. It has been determined that UA plays an important role in maintaining some of the cultural activities. To date, public and private institutions have not recognized the important role of UA. In the case of grassroots organizations, however, the lack of interest towards UA may be due to the lack of information and policies available on the subject.

In light of the above situation, CEARAH Periferia approached IDRC during a "UA in Latin America" seminar held in Bolivia in 1995 to discuss the needs and importance of developing UA research activities in the Metropolitan Region of Metro Fortaleza. The NGO succeeded in getting IDRC's collaboration to first do a study about the potential of UA and later develop concrete pilot projects in order to generate national debate and to understand entry-points for selected topics. In 1992, the Ceara government and the European Union started a program called "Comunidades (Communities)" that brought together a number of stakeholders³³ to develop self-reliant urban neighbourhoods for low-income groups in Metro Fortaleza. The program resorts to new technologies and collaborative arrangements to develop eight districts through self-help housing, employment generation, skills development and information services. UA can improve the nutrition of marginal groups through vegetable gardening and secure reliable sources of medicines, as well as generate income through surplus production.

Objectives

The objectives for this project are:

Graph 3: General and specific objectives by activity

• General		
Activity 1: <i>Survey Lessons & Recommendations</i>	Activity 2: <i>UA: Sanitation & Income Generation</i>	Activity 3: <i>UA: From Experiments to Programs</i>
➤ To document the extent and diversity of common UA practices in neighbourhoods and local projects using bibliographical and cartographic databases	➤ To identify locally appropriate options for urban gardening, livestock raising, & fruit-tree gardening to generate income and to treat household wastewater	➤ Based on research results from the 2 previous activities, this one was to allow CEARAH Periferia to pursue and launch new projects, and, building on the current momentum, to elaborate & negotiate a metropolitan program for UA

³³ Universities, technical schools community organizations, municipal and state entities.

• Specific		
<ul style="list-style-type: none"> - to acquire in-depth knowledge of UA activities in Fortaleza; - to establish the basis for more in-depth research about the importance of agriculture in the urban context; - to create a local working group in UA & reinforce the role of CIDADES³⁴ as a reference centre for UA experiences in the city. 	<ul style="list-style-type: none"> - to implement concrete tests in areas covered by the Communities Program; - to sensitise municipal & state government staff; - to create inter-institutional & disciplinary multi-actor working groups; - to elaborate a synthesis that will instruct a larger UA proposal for Metro-Fortaleza. 	<ul style="list-style-type: none"> - to consolidate 2 ongoing small UA project experiments & initiate 2 new ones; - to provide training in production, processing & management; - to share & debate results with multiple local actors; - to expand Ceara State database for use by local partners; - to exchange knowledge & information with other national groups & the AGUILA Network; - to formulate a program proposal for Metro Fortaleza & submit it to national & foreign funding agencies.

Methodology

In this study, UA refers to the development of agricultural activities such as horticulture, livestock rising, agro-forestry, aquaculture and other activities (medicinal plants, flower gardening, bee and humus production) in urban and peri-urban areas in an effort to obtain edible and non-edible products. The methodology used in the three research activities involved formal and participatory tools and techniques. The degree and intensity of their use depended on the information sought and desired results, based on the objectives set for each activity.

Activity 1: Survey Lessons and Recommendations

This activity was based on action-research with a multidisciplinary approach. The work was carried out in three steps:

- Step 1:* analysis of the actual situation through systematic sampling of UA activities practiced with the help of bibliographic and cartographic material (maps, photos, images) to come up with a typology
- Step 2:* the selection of case studies using field records from a socio-economic study; the selection of representative situations, analysis of UA activities in two areas of study and the analysis of two cases (1 success & 1 failure). Four case studies were completed. Tools used include structured and open-ended interviews, questionnaires, field observations and review of bibliographic material.
- Step 3:* synthesis and dissemination of results and methodologies used through working groups and seminars.

³⁴ The Documentation, Information and Local Dissemination Centre

Activity 2: UA for Sanitation and Income Generation

- Six viability studies involving four field experiments that included socio-economic and diagnostic studies of project sites and training activities. The selection of project sites was based on the following criteria: peri-urban lands located in marginal areas of Region Metro Fortaleza; presence of plots within urban limits; and municipal project areas located in the urban core subject to land speculation.
- Awareness raising activities through seminars and conferences with various sectors of the population in order to foster the creation of a permanent working group.

Activity 3: Up-scaling UA – From Experiments to Programs

- Participatory socio-economic diagnostics through field experiments.
- Training and strategic planning sessions through courses and seminars with technicians, community representatives, students and local and international institutions.
- Training courses and awareness raising workshops for communities.

Results

The studies resulted in the following:

- Surveys showed that UA activities are more concentrated in Fortaleza than in neighbouring cities. The largest yields of lettuce, coriander and shallots are produced in the state of Ceara, even though vegetables are not considered an important component of their diet. This response is mainly due to the population's limited knowledge about the nutritious value of vegetables. One of the most popular types of activities is kitchen gardening for household consumption and occasional sale of surpluses. The second most popular and least documented type is backyard planting usually associated with some kind of livestock production. The most densely populated slums in the city continue to be the main producers of horticultural products. Their production is destined for household consumption and commercialization within their neighbourhoods.
- In terms of institutional support, the bibliographic survey showed that government departments at the federal level are more concerned about the technical aspects of agriculture. There is less concern for related health and sanitary issues. At the central government level the concerns are similar, however, at the municipal level there are only project publications from 1989 on that show UA activities related to social assistance and education. The largest number of references (38 of 69) were found in federal libraries, 27 references on the subject were found among research institutions.
- UA has not been paid the attention it deserves by community development and grassroots organizations due to the lack of information on the topic. However, at the time of this first activity, Live Pharmacies, a new movement that is expected to provide poor households with home remedies, was providing a new dimension.
- There is a lack of reliable cartographic information for the study and planning of UA in Fortaleza. The Prefecture is working on digital mapping to be able to document cultivated areas.

- Horticulture is the most documented UA activity in the city of Fortaleza, followed by agro-forestry and aquaculture. In agro-forestry activities, special attention is given to fruit-tree gardening as an important economic activity in Ceara. In the documentation centre, CIDADES, there were 17 reports, 6 books, 4 projects, and 6 booklets about UA.
- Analysis of field records from 17 areas visited showed that 11 were dedicated to vegetable production (65%), 4 were dedicated to livestock production (23%), one dedicated to tree planting, and one dedicated to mixed production (livestock & vegetable). Most of the horticultural activities in the areas visited took place in peri-urban areas and were predominantly practiced by individual households (13 out of 17) followed by community activity (2), multi-family (1) and public (1) activities. The production is mainly for auto-consumption and commercialization of surpluses.
- 12 representative cases were selected in urban Fortaleza based on field analysis and bibliographic information in order to define a UA typology.

Graph 4: UA typologies identified

Typology	Location
Kitchen garden for auto consumption	→ Nearly in all households and neighbourhoods of the city
Collective kitchen gardens	→ For community use in poor neighbourhoods
Livestock raising	→ Marginal neighbourhoods & neighbourhood idle lands
Collective vegetable gardens	→ Idle lands of unknown tenure for consumption & income generation
Family vegetable gardens for commercialization purposes	
Community projects in associations with NGOs	
Community projects in association with government institutions.	

- Four case studies were completed instead of two in order to achieve a more complete view of the situation. The results from this activity showed that kitchen gardening is an activity that complements family diet and generates income. UA activities help the rural family integrate into the urban environment; while also allowing them to keep their traditional ways of life. In most cases kitchen gardens are managed by women, as opposed to livestock raising activities that are mainly run by men, with limited input from women.
- Five viability studies and four experiments on the topics of:
 1. *Development of aquaculture in Amanari (70 Km from Fortaleza) – Municipality of Maranguape*; results from the socio-economic study show that 100% of the population are of rural origin, $\frac{1}{4}$ are agriculturists and $\frac{3}{4}$ are dedicated to fishing. There are 7 species of fish and crustaceans harvested by residents. The study includes a project proposal to develop 3 different types of aquaculture systems (extensive in dams, intensive in floating nurseries & super intensive in 5 nurseries) to improve family diet, generate income and promote simple and cheap technologies. An experiment (1) was carried out for intensive aquaculture in floating fish nurseries, which raised interest and willingness among community members. The experiment involved the development of aquaculture in floating cages; establishment of 2 pilot prototypes to raise community awareness; production of 400 KGs of fish; training of 2

persons in the fabrication of nurseries and fish raising; introduction of Nile Tilapia; and the realization of a workshop on the construction and maintenance of nurseries. The study concludes that aquaculture activities in Amanari are viable considering existing favourable local environmental conditions and community acceptance.

2. *Horticulture and reforestation with fruit tree species in the area of Sierra Azul - Municipality of Macaranaú*; the socio-cultural study shows that 87% of the population practice agricultural activities for household consumption. The most popular activity is kitchen gardens with fruit trees, horticulture and medicinal plants. Sixty-two percent of the interviewees are presently working in agriculture, 52% of these buy animal manure because of poor soils. The study includes a proposal to develop horticulture and training activities for the production and transformation of agri-products and the installation of commercial outlets. The overall objective was to increase fruit and vegetable production in order to create self-sufficient neighbourhoods through the development and transfer of simple, and appropriate technologies.
An experiment (2) was carried out to assess community know-how and interest in UA. Activities involved the establishment of 5 vegetable beds, purchasing of high quality fruit trees, raising awareness of UA, reforestation of sidewalks, silviculture and gardening training and the creation of a study group in the Federal Technical School of Ceara. Results from the experiment show that families know and practice agriculture and are very interested in UA projects. The climatic conditions are favourable with the exception of eroded soils and limited water, problems that must be addressed.
3. *Treatment and reuse of wastewater in UA and the sanitary improvement of Park Havai – Municipality of Eusebio*; Eusebio has a population of 30, 000 inhabitants with the highest income per capita in Ceara. The city does not have potable water and lacks a sewage system. Potable water is collected from wells. Eusebio is also affected by rural migration that have led to the emergence of slums. It is in this context that the first program “Comunidades” (Communities) was implemented. This study presented a project proposal to develop the neighbourhood and improve health, environmental management and employment opportunities through complementary treatment of wastewater, know-how in agriculture, simple infrastructure and the establishment of preventive healthcare posts. Project activities were divided into 4 phases³⁵ involving 8 proposals for action³⁶. An experiment (3) was conducted to assess the role of horticulture and reforestation of fruit trees and the cultivation of medicinal plants in the complementary treatment of household wastewater. Experiment results demonstrated the importance of filtration fields in agricultural areas. The overall result of the study pointed to benefits of UA for the improvement of the health of the community and the physical environment.
4. *Use of stabilization lagoons in agriculture, aquaculture and small livestock production in the housing complex Renascer in the neighbourhood of Diaz Macedo - Municipality of*

³⁵ Execution & implementation of a maintenance system, complementary projects, organization of agricultural production and improvement in the collection of rain water and implementation of a surface drainage system

³⁶ Execution & implementation, water treatment, agriculture and medicinal plant production, establishment of information centres, establishment of an agro-enterprise, definition of the relationship between the agro-enterprise and the association responsible for health, improvement in the collection of rain water and drainage system.

Fortaleza; home to 480 families (2, 500 people), Renascer is a housing complex project funded and implemented by the municipality of Fortaleza. Unfortunately the data collected on wastewater treatment qualities was insufficient. The community showed an interest in aquaculture activities in the stabilization lagoons. However, it was concluded that the activity is a potential source of food contamination and disease due to the lack of interest by local authorities and limited scientific and technical knowledge.

5. *The potential of medicinal plants in Fortaleza.* Six percent of the world production in essential oils comes from Brazil. The exploitation of aromatic plants by a strong national network evolved from the exploitation of forests in the advancement of the agricultural frontier. This study included a project proposal to implement UA and to introduce the cultivation of aromatic plants in Fortaleza's marginalized neighbourhoods. The objective of the proposal was to use renewable natural resources to improve income and employment in the communities while strengthening medical assistance among poor families.
 - A series of activities including experiments with the Catholic University of Goiás and the Municipal Garden of Fortaleza were conducted to assess the use of local bamboo species in construction (4). Activities involved the identification and introduction of 5 local species from the Fortaleza region and the Guaramiranga range³⁷, the evaluation of bamboo structures, and a study on foreign species. The study concluded that none of the 5 local species of bamboo identified should be used in construction.
 - Two proposals were presented in the final technical report. The first proposal was to introduce research and UA development mechanisms for the metropolitan region of Fortaleza. The objective of this proposal was to follow up on the activities from the 5 viability studies. Further, its aim was to incorporate a 6th UA intervention area in Bom Sucesso, a neighbourhood that is prone to flooding. The second proposal was to develop a bamboo cultivation project (with local species) in the area of Goiás, in collaboration with the Catholic University of Goiás.
 - Floating fish nurseries in Amanari were introduced as an alternative source of income to improve nutrition and strengthen local capacity. A total of 12 metal (steel & nickel) cages of 5m³ and 6 PVC cages of 6m³ were used. Results showed that PVC cages were more efficient in terms of yield. The average production in both systems was the same during the terminal phase: 1,000 fish/month with an average weight of 380-420 grams per live fish. PVC cages have greater stocking capacity, are cheaper to build, lighter, easier to handle and more durable (don't oxidize).
 - Participatory planning and implementation of an aquaculture project was introduced in the community of Penedo (50 Km from Fortaleza). While similar to the one in Amanari, this project used different material and feed. This component included the construction of water-resistant wooden frames and mesh covers, which reduced the construction costs by 20% compared to the structures built in Amanari. Fish were fed vegetable matter (vegetable, fruits and fodder waste) once a day. The results shown in the growth of fish were similar to those from the Amanari project.

³⁷ 150 Km from Fortaleza.

- 3 different types of UA activities were implemented and developed with the non-profit NGO “A Sociedade Cearense Eunice Weaver” in Fortaleza, home to 243 sick and abandoned children (2-17 years of age). The objective was to improve the diet and quality of life of the children and to have a reliable source of natural medicines. Vegetable and fruit gardening and medicinal plant cultivation activities were conducted through a participatory process that involved 3 research team members, youngsters and NGO staff. Twenty-six 10x1m rectangular blocks were built for vegetable gardening. Existing fruit trees were rehabilitated. A 10x1m rectangular seedbed for medicinal plants was constructed. However, the activity was slowed down by a lack of available seedlings in the Region Metro Fortaleza, forcing participants to produce their own.
- Eight 10x1m rectangular blocks were built with the community of Genibau. Activities involved preparation of substratum, construction of a water reservoir for irrigation, production and planting of seedlings and fertilization.

Impacts:

The projects had impacts in the following areas:

Human resources development

- 100 people including students from the Federal Technical School (ETFC), academics and technicians from the municipality attended 2 conferences on botanical aspects of bamboo and possible uses (construction, food & crafts). A professor from ETFC led the sessions.
- 6 fishermen from 3 communities³⁸ attended a course on theoretical and practical aspects of the floating cage (construction, control and calculation of rationing), given by a professional from CEARAH Periferia and a representative of the Mayor’s office.
- Three training courses were delivered to members from the community of Genibau on the cultivation of medicinal plants and the preparation of herbal remedies.

Institutional capacity building

- The project team from the Eusebio UA and wastewater use project organized several technical meetings and gave a seminar to a group representing various stakeholders. Participants included staff from the Municipal Secretariats of Health and Public Works, social & health workers, business people, farmers and technicians from NGOs.
- The aromatic plants study resulted in two awareness-raising seminars attended by 30 persons, including participants of the Communities Program, NGOs and other associations.
- A cycle of 3 seminars was given at the ETFC by the CEARAH Periferia research team. The seminars provided participant communities with a better understanding of UA activities, presented potentials regarding income generation and improvements to quality of life.
- Courses on vermiculture, composting, nurseries and gardening techniques were given by consulting agencies and experts on the subjects to young Eunice Weaver residents and staff. Ten children participated directly in all activities involving vegetable gardening.

³⁸Amanari, Penedo & Forquilla.

- Two workshops on fisheries development directed at representatives from fishery institutions were organized by the ETFC in collaboration with CEARAH Periferia. The purpose of both activities was to help them identify training needs and staff qualifications in their sector.
- CEARAH Periferia gave 2 workshops on UA in collaboration with IDRC and the ETFC. Twenty-six representatives from various communities in the Region Metro Fortaleza and its peripheral areas attended. The topics covered were: UA in Income Generation and Organic Agriculture/Medicinal Plants. The second workshop was organized to strengthen UA actions and develop an action plan for the implementation of integrated UA activities and training on organic techniques. A guest speakers at the workshop, the Director of International Development at FORMABIO, gave a presentation on “UA: A long-term solution against hunger – Experiences from France”.

Effective partnerships

- Several actors from the urban environment were sensitized through direct contact and seminars. Many of these actors, who had never been previously exposed to UA issues, were ready to discuss and develop UA projects in their respective institutions.
- A well-known Colombian architect assisted the CEARAH Periferia research team on the bamboo construction study that involved joint missions with the Department of Arts and Architecture from the Catholic University of Goias and other local institutions.
- GRET Urbano in collaboration with the Public Works Secretariat co-ordinated several activities as part of a community campaign at Park Havai in Eusebio to end individual cesspools (reservoirs for liquid waste), the main cause of water table contamination.
- A working group was created as a result of the various technical meetings and seminars. Members include federal academic institutions, tenant’s organizations and federations, community associations, researchers, urban farmers, local and international NGOs and environmental/social research interest groups from academic institutions.
- With IDRC funds, the UA program of CEARAH Periferia has developed a partnership with the community of Genibau to establish a medicinal plants garden. The program will involve hands on management and administration with the support of a technician.
- Two French aquaculture researchers from an agricultural college in Coulange conducted an analysis on aquaculture in Amanari that led to the elaboration of an extensive project proposal. Their contribution also involved activities to protect the lake and raise environmental awareness in fishermen.
- One professional from CEARAH collaborated with the Fortaleza organization “Via Ecológica” on a weeklong course in gardening and landscaping.
- During the exchange mission to Dunkerque, France, the CEARAH co-ordinator met with the Director of The Adult Professional Training Centre, who later visited the project areas. His visit contributed to the reinforcement of UA work with communities and a partnership with the urban community of Dunkerque.

Gender Focus

- Young males and females from the community of Penedo participated directly in the design and assembling of cages. Five of them (1 female & 4 males), all grade 5&6 students, were selected to participate in the project from beginning to end.
- Research results from the third activity “Up-scaling UA – From Experiments to Programs” confirmed that women from Genibau fabricate alternative medicines to treat diseases that frequently affect children.

Contribution to multi-disciplinarity

- A multi-disciplinary group that included an architect/urban planner, an agronomist, a geographer, and an engineer in fisheries composed the CEARAH Periferia team.
- The viability study on horticulture and fruit tree reforestation brought together agronomists, urban planners and sociologists to assess and categorize the types and potentials of urban spaces for the development of UA activities.

Scientific and methodological advances

- The study “Survey Lessons and Recommendations” represented the first study that directly tackled the topic of UA in the Region Metro Fortaleza.
- The knowledge acquired around the development of agro-pastoral activities in the urban environment, the traditional aspects surrounding these activities and identification of new external factors to the project are all new to the research team.

Research results utilization

- Three of the five viability studies resulted in the creation of awareness seminars and dissemination of their results.
- Members of CEARAH team actively collaborate in yearly activities organized during the fruit gardening week in any selected city from Northern Brazil. For a week the team delivers courses, panels and conferences on diverse agriculture topics.

Fund leverage

- The second activity received a contribution of 11,000CAD from the European Community. CEARAH Periferia contribution in activities 1 and 2 was worth 111,300 BRL.
- An exchange mission, where the CEARAH co-ordinator that also represented IDRC and the ETFC travelled to Dunkerque, France. The objectives of the missions were to exchange experiences on organic agriculture and certification of organic products, and to look for new partners to continue the project.

Lessons Learned

1. There is a need to continue with new studies and experiments that can be used as dissemination strategies to show the potential of UA in the Region Metropolitan Fortaleza. Further studies are also required to illustrate the importance of public policies and awareness among the different actors involved.

2. UA activities, particularly kitchen gardens, are practiced in idle urban spaces and public areas. The utilization of the space depends on the existence of reliable water bodies. In areas where UA is practiced there is a positive impact on the ecology that can be seen by the presence of a microclimate. Whilst in other UA areas, there is high degree of contamination by smoke, waste and excessive use of agro-chemicals.
3. In Fortaleza, there are urban farmers from various economic profiles demonstrating that UA is not exclusive to poor families. Nevertheless, the lack of technical agricultural knowledge and viable markets has limited the production of vegetables to three crops (coriander, shallots & lettuce).
4. UA represents a mechanism to integrate the rural population into the urban environment, mainly through the propagation, cultivation and use of medicinal plants and kitchen gardens. The production from these two activities is primarily used by poor families in the preparation of home remedies and food for self-consumption. Both activities are family oriented and involve a great deal of local knowledge.
5. There is a need to define policies that include UA in the solution to food security problems in city slums. UA must be considered as an integral activity and not as isolated projects. UA can be integrated in housing, income-generation and training projects within the city. Urban farmers' perception of UA is positive, however there are feelings of insecurity regarding land ownership and restrictions on livestock production. Feelings of resignation were expressed regarding the lack of external support and interest in UA activities by the authorities especially as it is the only means of survival for many families.
6. It is evident that there is a strong relationship between UA and wastewater reuse. Technical solutions exist that permit the treatment and reuse of wastewater for irrigation.
7. Aquaculture in floating cages offers great potential. Particularly, when one considers the low investment and installation costs and short-term returns. The final product is appreciated in the local market and it provides a steady income that contributes to the improvement of quality of life among families.
8. Firstly, the medicinal plants project with the community of Genibau was successfully implemented because the project responded to the production standards established by the "Programa Estadual de Fitoterapia da Secretaria de Saúde do Estado do Ceará". The project was also a success due to the participation and organization developed by women through their perseverance in the construction of gardens and the training course. This activity demonstrated that is possible to farm small spaces and yet obtain quality products.
9. UA activities in places like Eunice Wever represent a great potential for the training, demonstration and raising awareness of UA benefits and advantages.

Publication List and Brief Review

Final project reports

CEARAH Periferia. 1997. Agronomia Urbana na Região Metropolitana de Fortaleza: Inventário de Práticas Populares e de Projetos, Relatório – síntese.

CEARAH Periferia. 1997. Agronomia Urbana na Região Metropolitana de Fortaleza: Inventário de Práticas Populares e de Projetos, ANEXOS.

Both reports resulted from the first of the three activities on UA research in the Region Metro Fortaleza included in this synthesis. The Relatório (115 pages) contains context, objective, methodology and results of the inventory. It contains information on 12 representative cases and 4 case studies. Case studies were used to collect more detailed information about location, socio-economic, environmental and UA aspects. The case study information is thoroughly presented and includes location maps and pictures of the area. The second report is a compilation of annexes including bibliographical surveys, pictures of on going projects, field and case study records and questionnaires used in case studies and interviews with individual farmers.

Cabannes, Yves. 1997. Agricultura urbana pelo saneamento e geração de renda na Região Metropolitana de Fortaleza, Estado do Ceará, Brasil: Relatório Técnico Final. GRET Urbano – Brasil.

Cabannes, Yves. 1997. Agriculture urbaine pour l'assainissement et la création de revenus dans l'agglomération de Fortaleza, État du Ceará, Brésil. GRET Urbano – Brasil.

This report, produced in Portuguese and French, presents research activity descriptions, results and impacts achieved during the second research activity of the project “UA in the Region Metro Fortaleza”. The report begins by providing a synthesis of 6 viability studies, which will be applied to this activity. The report continues by presenting the context of Fortaleza and providing a summary on each one of the viability studies, 4 field experiments, training and awareness activities and the presentation of two major proposals and strategies at various levels for the strengthening of UA in the region. The report concludes with a chapter on annexes that includes records of conferences and seminars, botanical records of selected fruit species and field records on stabilization lagoons and infiltration basins from Dias Macedo and Eusebio.

Albuquerque, Roberto. 1996. Estudo de viabilidade para desenvolvimento da piscicultura na Comunidade de Amanari em Maranguape. ETFC & GRET Urbano – Brasil.

This study starts by presenting the context of Amanari, it continues with the results of a socio-economic study and types of aquatic resources used by the community. The document includes a project proposal to develop three different types of aquaculture (extensive in dams, intensive with floating nurseries and super-intensive in 5 nurseries). The proposal considers technical,

socio-economic and environmental aspects associated with the activity. The study concludes that aquaculture activities in Amanari are viable considering existing favourable local environmental and socio-economic conditions. The document includes pictures, maps and questionnaires in the annex section.

Albuquerque, Roberto. 1996. Estudo de viabilidade de hortas e arborização com frutíferas no Mutirão Serra Azul em Maracanaú. ETFC & GRET Urbano – Brasil.

This study begins analysing the context of Macaranau and its agricultural vocation and continues with a socio-cultural survey showing involvement in UA. It provides information on types of UA activities practiced and identifies different spaces with UA potential. The document includes a technical proposal to develop horticulture and training activities in production and transformation of agro-products.

Albuquerque, Roberto. 1996. Estudo de viabilidade de lagoas de estabilização de Comunidade Habitacional Renascer Dias Macedo. ETFC & GRET Urbano – Brasil.

This study begins by providing socio-economic and environmental information about the community; it provides detail and simple information on the functions and uses of stabilization lagoons. The diagnostic concludes that the treatment quality data collected in the area was insufficient. Therefore, it suggests a systematic appraisal of physical, chemical and microbiologic conditions of the water in the different basins prior to any UA activity in order to prevent potential risks of contamination.

Collombon, Jean-Marie. 1996. Valorização da produção de plantas aromáticas na Região Metropolitana de Fortaleza: Estratégias para um desenvolvimento sustentável e propostas para um Programa Piloto em Pacatuba. GRET, CERDEPPAM & GRET Urbano – Brasil.

This study analyses world market trends in the production of aromatic plants and provides an analysis of the national market. The study documents 2 experiences from Latin America (Bolivia and Argentina) and draws lessons for the implementation of similar activities in the Region Metro Fortaleza. The 3rd part of the study examines medicinal plant programs (live pharmacies and herbal medicine) in Fortaleza and documents local aromatic resources. The document includes a project proposal to implement progressive development of UA units to integrate the aromatic component in Fortaleza.

Eynde, Pierre Van Der and Patrick Bodart. 1996. Tratamento e reutilização de águas servidas a serviço da agricultura urbana e da melhoria sanitária no Eusébio: Estudo de viabilidade. GRET Urbano – Brasil.

This study starts by presenting the context of Eusebio, it provides a description of economic activities, existing physical and environmental conditions, and alternatives for water use. The

study was elaborated around 5 criteria and concludes with a proposal to develop the neighbourhood and improve the overall conditions through complementary treatment of wastewater, agricultural knowledge, simple infrastructure and establishment of a preventive healthcare post.

Beltrão Júnior, José Aguiar and Roberto Albuquerque. Relatório Técnico: Informes Narrativos do Projeto Agricultura Urbana na Região Metropolitana de Fortaleza. CEARAH Periferia. Received December 1999.

Beltrão Júnior, José Aguiar and Roberto Albuquerque. Rapport Technique – Changement d'échelle en Agriculture Urbaine: des experimentations a un programme. CEARAH Periferia. Received December 1999

This report (2 copies: 1 Portuguese & 1 French) present research activity descriptions, results and impacts from the last of three UA project for the Region Metro Fortaleza.

Book articles

Albuquerque, Roberto. 1999. “Agricultura Urbana, Medio de Generación de Renta y Transformación Social: Experiencias en la Región Metropolitana de Fortaleza”, in Agricultura Urbana en America Latina y el Caribe: Impactos de proyectos de investigación. FLACSO & IDRC – Canada, pp.87-97.

This article originated from the workshop “Researching the Development of Urban Agriculture in Latin America and the Caribbean: Balance and Optimization of Projects’ Impacts”, in San Jose, Costa Rica, May 23-27, 1999”. The workshop was organized by IDRC to evaluate UA project impacts.

Section II. Second Generation of Projects

- II.1. Urban Agriculture and Feeding the Latin American & Caribbean Cities: Best Practice and City Consultation (04155)**
- II.2. Regional Training Course on Urban Agriculture (100641)**
- II.3. Integrated System for the Treatment and Recycling of Waste Water in Latin America: Reality and Potential (100123)**
- II.4. AGUILA Executive Secretariat and Evaluation (100503)**
- II.5. Participatory Impact Evaluation Methodologies for Urban Agriculture in Latin America and Caribbean (04486)**

II.1. Urban Agriculture and Feeding the Latin American & Caribbean Cities: Best Practice and City Consultation (04155)

Project Summary

This project involved various research activities with selected municipalities of six countries in Latin America and The Caribbean Region (LAC); namely, Argentina, Brazil, Cuba, Ecuador, Honduras and Mexico. The total cost of the project was 400,830CAD of which 150,830 CAD was granted by IDRC, 100,000 by the recipient and implementing agency UNDP/UNCHS and a joint contribution of 150,000CAD by UNDP/UNCHS and the World Bank. The Instituto de Promocion de la Economia Social – Peru (IPES-Peru) and IDRC were responsible for the administration of project funds. The co-ordination of research activities were the responsibility of the recipient institution, the Urban Management Program – Latin America and Caribbean Office (UMP-LAC), a UNDP initiative executed by the UNCHS–Habitat. The duration of the project was 2 ½ years, from November 1998 to August 2001. Its aims were to document existing UA experiences in LAC cities. The project was oriented towards UA policy and decision making at the municipal level, as such it generated important databases and information based on five case studies, four baseline studies and one city consultations that were supported by a number of meetings, seminars, workshops, and a participatory communication process. A summary of project results, objectives and impacts are presented in Appendix VI.

Background

Exponential demographic growth coupled with continuous increase of rural migration has contributed to the rapid urbanization of LAC cities. About 75% of the region's population live in urban areas. Since 1986, urban poverty has been increasing with more poor found in the cities than in rural areas. It is estimated that the number of urban poor in the region will continue to increase over the next decade reaching up to half of the region's urban population. This trend is already having an effect on food security and availability among this segment of the population, since a large share of their income is spent on food and fuel. National and local governments are aware of extreme poverty and aggravating socio-economic disparities that are exacerbated by new and existing economic policies in the region. The President of the Inter-American Development Bank expressed these concerns during the 1998 Bank's Assembly in Cartagena.

The urban poor have diversified their food procurement strategies and urban food production has resurged since the 1970s. In the mid 1990s, with several community and municipal initiatives reportedly taking place in the region, several regional and international organizations came together to support more coherent and effective inclusion of urban food and fuel production into local development strategies. These organizations included the Support Group on Urban Agriculture (SGUA), the AGUILA Network and the UMP – LAC/UNCH-HABITAT. A series of regional and international activities organized by these groups (meetings, seminars, colloquiums, documentation and publication of experiences) assisted the inception this project.

In June 1999, IDRC, IPES – Peru and the Latin American and Caribbean Regional Office for the UMP/Habitat – UNDP initiated the project called “ Urban Agriculture and Food Security for Latin American and Caribbean cities”. The project involved an examination of 10 cities in the region: six resource cities (case studies), four associate cities³⁹ for baseline study, one of which was selected for a city consultation. Project activities were implemented in three phases: (1) Selection and contracting of project co-ordinator; (2) Elaboration of baseline and case studies; and (3) City consultation. The 6 case studies describe the nature, characteristics and impacts of existing municipal policies and programs on UA in the cities of Brasilia and Teresina (Brazil), Camilo Aldao (Argentina), Cuenca (Ecuador), Havana (Cuba) and Texcoco (Mexico). The 4 baseline studies describe the actual presence, impacts and development potential of UA in the cities of Curaça (Brazil), Montevideo (Uruguay), Puerto Cortés (Honduras) and Quito (Ecuador).

After a competitive process⁴⁰ among associate cities, the city of Quito (Ecuador) was selected for the city consultation. The city consultation⁴¹ allowed the identification of actors involved in UA and the drafting of the Action Development Plan for UA development in Quito. The results and methodologies used in this process will be made available to other cities in the region. Hence, this project is part of a larger regional initiative to develop participatory processes for local planning in LAC.

Objectives

The objectives of this project were:

- **General**

In response to interest expressed by several Central and Southern American municipal governments, this project is intended to assist a group of resource and associate cities in the documentation of UA experiences. The activities include the documentation of UA experiences in 5 resource cities⁴², the production of diagnoses of UA activities in 4 associate cities, and the implementation of a city consultation process in one associate city. This process is to facilitate the formulation of a concerted action plan and specific related projects, and to systematize and disseminate its methodology and results to other interested cities in the region.

- **Specific**

- a. To document, review and share significant UA experiences, either ongoing or recently carried out at municipal and/or community levels, paying particular attention to the roles and benefits accruing to different stakeholders in 5 resource cities selected by the UMP-LAC, in consultation with IDRC/CFP;
- b. To design and produce baselines on the significance, benefits and constraints posed by current UA activities in 4 associate cities, where local governments wish to assess the need

³⁹ Cities selected to conduct detailed baseline studies on the actual presence and impacts of UA.

⁴⁰ Refer to methodology section for process details.

⁴¹ City consultations are processes that seek to improve how municipalities govern their cities and to foster more participatory processes of urban management.

⁴² Six case studies were eventually completed in the course of the research.

for greater support or better management of such activities within improved urban management strategies;

- c. Select one associate city to oversee, advise, support and disseminate a multi-stakeholder city consultation on UA, to instruct the formulation of a concerted action plan and specific related project focusing on UA;
- d. To enable resource cities to share their own experience, advise the city consultation and report on consultation process to associate cities where baselines were carried out;
- e. To enable interested domestic and international co-operation agencies to advise the formulation of the action plan and to express possible interest in supporting technically and/or financially their implementation;
- f. To identify training capacities locally available or not in the field of UA, required by stakeholders (municipal and other governmental entities, NGOs, and CBOs, producer associations) to implement the action plan and related project, as well as to disseminate experiences widely through the region;
- g. To promote, where appropriate, in other UMP-LAC city consultations, the inclusion of UA in local agendas; and
- h. To promote closer interaction between regional experts networks, such as AGUILA, and regional networks of local authorities, such as IULA-LAC, the Federation of Municipalities of the Central America Isthmus (FEMICA), Metropolis, Red de Asociaciones Municipales and others.

Methodology

In this project, UA is understood as an activity “that produces, processes and markets food and fuel, largely in response to the daily demand of consumers within a town, city or metropolis, on land and water dispersed throughout the urban and peri-urban area, applying intensive production methods, using and reusing natural resources and urban wastes, to yield a diversity of crops and livestock.”⁴³

The project was carried out at two interacting levels: (1) The production of a series on best practices through case studies in 5 resource cities⁴⁴ and baseline studies in 4 associate cities; (2) The implementation and design of a city consultation and action plan in one of the associate cities.

Level 1 – Resource cities and associate cities:

Fifty cities were identified and invited to participate in a selection process by the project team. Thirty municipalities from the fifty cities competed and ten cities representing various city sizes, sub-regions and a range of ecosystems were selected. The selection process for both categories was enabled by a set of pre-established criteria. City experiences were documented and

⁴³ Smit et al, 1996:3 quoted in CFP on line project fact sheet: http://www.idrc.ca/cfp/facts68_ehtml

⁴⁴ Cities selected to systematize, through case studies, municipal policies and interventions on UA & analyzing their sustainability and transferability

reviewed by a local team of researchers and partner institutions in each city using terms of reference and a standard questionnaire prepared by the project co-ordinator.

Graph 5: Summary of concepts (resource & associate), meanings and parameters used at this level of the study

CITY	SIZE MILLION-INHAB ⁴⁵	SUB-REGION	ECOSYSTEM	SELECTION CRITERIA
Resource cities: used to systematize, through case studies, municipal policies and interventions on UA & analysing their sustainability and transferability.				
Brasilia (Brazil)	0.5-1	Brazil	Temperate	Degree of: Success of existing municipal UA policies & interventions; Integration of different aspects of the production cycle ⁴⁵ ; Integration/links with other UMP-LAC programmes; and Magnitude of the experience.
Camilo Aldao (Argentina)	<50,000	Southern Cone		
Texcoco (Mexico)	0.1-0.5	Mexico	Highland	
Cuenca (Ecuador)		Andean Highland		
Havana (Cuba)	1-4	Caribbean	Tropical Humid	
Teresina (Brazil)	0.5-1	Brazil	(Semi) – Arid	
Associate cities: used to conduct detailed baseline studies on the actual presence and impacts of UA.				
Curaça	<50,000	Brazil	(Semi) – Arid	Degree of municipality's political interest; Dynamism of civil society; Quality & nature of municipality-urban actor relation; Pertinence of the problem at local level; Possibility for local impact &change in the short-term; Regional representativeness; Local capacity for capitalization on experience; Level/degree of UA in the municipality; Degree of integration with other UMP-LAC programmes
Montevideo (Uruguay)	1-4	Southern Cone	Temperate	
Puerto Cortés (Honduras)	0.05-0.1	Central America	Tropical Humid	
Quito (Ecuador)	1-4	Andean Highland	Highland	

- The *case study* technique provided the means (e.g., elements to develop new policy framework) for a better understanding of the development of and types of UA municipal programmes, and may serve as a guideline to develop similar programs in the region in the future.
- In *baseline studies*, also referred to as participatory diagnostics, local teams from selected cities were responsible for analysing quantitative and qualitative data around key issues on UA such as: policy framework, physical and social environment, impacts and municipal vision. The studies also allowed the identification of UA types practiced and the potential to develop sustainable UA in each of the cities through action planning and policy formulation. Techniques used included rapid visual diagnostic, random sampling and surveying, surveying of pre-selected samples, field observations, community and municipal workshops. Among the tools used were questionnaires, maps, structured interviews and city consultations.

⁴⁵ Inputs, production, transformation, commercialization.

Level 2: Implementation of a city consultation on UA:

Results from case and baseline studies were presented and analysed by Mayors and UA professionals at an international workshop⁴⁶. The outcomes of this workshop contributed to the development and implementation of a city consultation process in which associate cities were asked to enter a competition for the implementation of the City Consultation on UA. By the end of May 2000, UMP – LAC had received two complete City Submissions⁴⁷ (City Dossiers). The two Dossiers received were evaluated by IDRC – CFP, UMP – LAC and IPES. It was decided to select the city of Quito (Ecuador) due to the *regional relevance* of the project proposed⁴⁸, its *innovative character*⁴⁹, and its potential for having a *short-term impact on policy uptake*. Once the Quito was selected, an issue-scoping seminar took place with various stakeholders⁵⁰ to discuss the baseline study and elaborate an Action Plan for the city. The Action Plan drafted included a priority action programme, pilot projects, institutionalization of UA and systematization and dissemination of UA. The priority action programme helped to define stakeholders' roles and UA pilot project implementation guidelines. It also intended to support the development of a favourable municipal legal and institutional framework on UA that facilitates the implementation of pilot projects (4 projects in barrio El Panecillo) and other UA activities.

Results

This study resulted in the following:

Knowledge management

- An issue of the *Urban Age* was published, dedicated to “Food for the Cities”(Winter 1998)
- Six reports were prepared describing city case studies on UA at the municipal level in six selected resource cities of LAC.
- Four baseline studies on UA in four associate cities were elaborated.
- Six videos: 5 on UA experiences in 5 different LAC cities (Brasilia, Camilo Aldao, Cuenca, Havana and Quito), and 1 on the UA programme activities in El Panecillo were produced.
- One document systematizing the methodology and process of implementing a baseline study.
- Short articles on the UA Programme activities published in the UMP LAC “Breves” (distribution to 1500 readers).
- Inclusion of the project description and results in the UMP-LAC, IDRC, City Farmer and RUAF website.
- Two short articles on the UA Programme activities published in the first and fourth issue of UA Magazine.

⁴⁶ Agricultura Urbana y Alimentación de las Ciudades de América Latina y El Caribe, celebrated in Quito on April 2000.

⁴⁷ Montevideo (Uruguay) & Quito (Ecuador)

⁴⁸ It links with 3 topics prioritized by the LAC City Working Group.

⁴⁹ Like the focus on incorporation of UA into land use planning and the formation of a Municipal Unit on UA.

⁵⁰ Local government, civil society and community representatives.

- Five working papers (77, 83, 84, 86 & 87)⁵¹ published.
- A CD-ROM on the City Consultation/Action programme in Quito was produced.
- Four manuals: 2 on composting and vermiculture, and 2 on the establishment of agro-industries and hygienic handling of food produce.

City Consultation and Action Plan:

- One baseline study on UA in the Metropolitan District of Quito was elaborated.
- Actors involved in UA in Quito were identified.
- One Action Plan for UA development in Quito drafted and discussed in a multi-stakeholder forum.

Priority Action Programme:

- One inter-actor agreement on the development of a Priority Action Programme in El Panecillo, with financial support from the municipality, was elaborated and signed.
- One socio-economic baseline study of El Panecillo was developed.
- A micro-credit seed fund was established, a credit management committee formed and the criteria for the operational base defined.
- A proposal for regulations on land access for UA was presented to the Municipality of Quito.
- UA was recognised and included in the Quito general land use plan (2002-2020).
- Project document for up-scaling of the UA programme to the entire Metropolitan District of Quito was elaborated.
- Four UA pilot projects were developed in El Panecillo.
- El Panecillo households were trained in ecological production techniques, transformation and commercialization of agriculture produce, composting and vermiculture.
- Three business plans were elaborated for the formation of 3 agro-industrial micro-enterprises.
- The UA Action Programme is contributing to the social inclusion of vulnerable groups like youth, elderly, women and unemployed to:
 - improved food security by contributing to a higher and more diversified yield of the home gardens;
 - income and employment generation; it has generated direct employment for the 23 families involved in agro-industries;
 - environmental management through waste recycling and reforestation; and
 - participatory governance through community influence on political decision-making.

Lobbying

- LAC City Working Groups on UA and Food Security was formed, with representatives from 40 cities of the region.
- A Quito Declaration on UA was formulated and signed by all 40 member cities.
- The project and its preliminary results were presented at various international events.

⁵¹ See section on Publication List and Brief Reviews.

Institutional anchoring/mainstreaming:

- UMP-LAC and IPES staff were trained in UA.
- One formal co-operation agreement was signed between UMP-LAC/IPES and ETC/RUAF.
- UMP-LAC was selected as RUAF Regional Focal Point.
- Collaboration with RED AGUILA and FAO was strengthened.
- Two case studies (Cuenca and Texcoco) were added to the HABITAT Best Practice Database.
- Summaries of the Cuenca and Havana experience included into the KIT “Ciudades y Medio Ambiente” elaborated by UMP, IPES, CESEM, FMCU and HIC.
- UA included in other UMP-LAC City Consultations and programmes.
- UA recognised as a strategy for municipal development by other UMP regional offices.

Impacts:

The study had impact in the following areas and on the following actors:

Human resources development

Research team – IPES/UMP-LAC:

- Team members have built their knowledge and understanding of UA in the region, more specifically: the notion of UA and its relationship with other fields; operation of micro-credit systems and establishment of agro-industries; the importance of linking action-oriented processes with political processes; communication and education processes; participatory methodologies including gender analysis and environmental assessment; project and financial management; and identification of fields of expertise to be developed in the future.
- By involving other UMP-LAC staff in programme implementation activities (participatory governance adviser, gender and urban indicators adviser and urban environmental adviser) the team’s understanding of UA concepts and its linkages with other thematic fields has increased.

Staff of the Regional Anchoring Institutes:

- New knowledge and capacities in UA and in the systematization methodologies (IPES).
- Production of video and CD-ROM *CIUDAD*.

Municipality and NGOs involved:

- Formulation of micro-credit programmes for UA and regulation of UA.
- Inter-institutional collaboration and participatory project management.

The community:

- Capacity building in relation to financial management of micro-credits, organic production, transformation and commercialization, recycling of organic wastes, project management and budgeting.

University students:

- Five students from different countries (Germany-3, Ecuador-2) have supported the project in the short and long term.

- Since January 2001, one student from the Catholic University has been working full time at the UMP-LAC supporting the development of the project, and is being trained in project management and implementation.
- Six high school students have been involved in the project doing their practicum in the community garden pilot project in El Panecillo.

Institutional capacity building

- Staff from UMP-LAC has increased its understanding of urban management intervention processes, and the value of identifying its strong and weak points to be worked upon.
- UMP-LAC has been able to support mainstreaming of UA by integrating it into other fields of work and in turn enriching UA with the experience of other working areas⁵². The project has supported the establishment of a common working agenda and produced interdisciplinary knowledge.
- The UMP-LAC Anchoring Institution IPES was responsible for the financial management of the project. Through its involvement in the AGUILA and RUAF programme, IPES's capacity in program and financial management, project formulation and implementation at the regional level has been strengthened.
- The municipality of Texcoco (Mexico) as the co-ordinating city of the LAC City Working Group on UA and Food Security is being strengthened in its capacity to make regional processes more dynamic, elaborate and monitor work plans and formulate projects in a participatory way.
- In the City Consultation/Priority Action Programme, the Municipality of Quito has strengthened its capacity to oversee and guide multi-stakeholder processes, collaborate with civil and private actors, promote community participation and formulate concrete action plans, related projects and local policies on UA.

Effective local partnerships

In the City Consultation/Priority Action Programme:

- A local team involving municipal, civil and community actors was responsible for project management and implementation.
- The role of local NGOs was invaluable in the daily contact with community actors.
- Different municipal departments play a very important role in facilitating urban farmers' access to land, inputs and capital.
- UMP is mainly contributing to the advocacy and knowledge management components with regional information and thinking on urban management.
- The community is the main actor for planning, guiding and evaluating the programme. The community-composting group elaborated the co-operation agreement with the Parks and Garden Department to ensure the sale of their produce. The leadership of 4 community co-ordinators responsible for each of the 4 pilot projects is recognised by the community and all

⁵² Local economic development, integrated waste management, gender, and institutionalization of participatory processes.

four of them are asked to represent their communities in the Panecillo Neighbourhood Council.

Gender Focus

- In the implementation of Priority Action Programme, there was an effort to integrate gender analysis by desegregating data, monitoring of participation of both genders, promoting the participation of vulnerable groups and identifying specific activities to respond to the needs of each group of actors. This step has been the first of many to come in order to reach a more explicit understanding on gender analysis.
- Although the project responded to the practical needs of women (income, food, jobs), more attention needs to be paid to their strategic needs (self-esteem, leadership, decision-making).
- Further reflection on gender analysis will specifically be incorporated in the manuals being elaborated by UMP-LAC and should receive special attention in future programme development.

Contribution to multi-disciplinarity

- UMP-LAC staff and their anchoring institutes (IPES & RUAF) established contacts and aided in the mainstreaming of UA into other UMP-LAC City Consultation and monitoring programmes.
- During the course of the project, several actors became involved in order to complement the different disciplines (an architect, a social worker and agronomists) necessary for the project's implementation. Experts from other countries became involved in training activities.
- A large percentage of women participated, resulting in a better understanding of their roles and responsibilities as well as the need to support the development of more gender equity approaches.

Scientific and methodological advances

- The methodology used in the process City Consultation – Action Plan – Priority Action Programme is innovative in linking research and action, combining concrete project implementation and policy formulation/institutionalization, and bridge building between public, private, non-governmental and community based actors.
- Baseline studies should not be considered as photographic shots of a specific situation at a determined point of time, but should allow for concrete and participatory action planning and impact monitoring.
- The project contributed to understanding the place of UA in its urban context and identifying the apparent factors for its success and up scaling. It also allowed for the identification of themes to be worked out in future (inclusion in land use planning, investment, UA – food security relationship).
- The project has shown that for incorporating a real gender and environmental perspective it is necessary to apply specific techniques and methodologies. Furthermore, when constructing

UA policies it is necessary to recognize and build upon the support of and processes developed by the urban farmer.

- UA interventions (technical nature) are a concrete entry-point and catalyst for more complex and integrated interventions like integrated urban environmental management, urban poverty alleviation and participatory governance.
- The methodology used has been documented and published and it will hopefully serve as a practical tool for other municipalities to embark on similar processes.

Research results utilization

- In the months after the international seminar “UA in Cities of the 21st Century”, the Quito Declaration was signed by an increased number of 19 new municipalities: 15 from Argentina, 1 from Bolivia and 3 from Ecuador. Two Northeastern Brazilian cities (Maranguape & Independencia) have expressed interest in integrating UA into their own activities, but are presently lacking the financial means to do so.
- **Argentina:** the *Municipality of Camilo Aldao* called a meeting with a government institution, a research NGO and other municipalities in Cordoba Province with the idea of forming a national network to promote UA as a strategy for local development. In total 15-20 municipalities from Camilo Aldao and surrounding provinces are involved. The Municipality has also formulated and negotiated a project in organic horticulture on Camilo Aldao wastelands. Fifty families started to work on urban food production for local commercialization. In collaboration with the Psychiatric Hospital, the project focuses on home gardening to supply the hospital kitchen, where 25 persons (5 patients & 20 staff) will form a social co-operative.
- **Brazil:** the *Municipality of Curaça* is enabling the establishment of an organic community garden (10Ha), where 300 persons could cultivate a small lot (300 m² per person). In *Santo André* (City consultation on social inclusion and citizen participation), a presentation on innovative UA experiences in the region was given in the context of a seminar on local economic development. Also meetings were held with different municipal representatives and the University of British Columbia. Interest was expressed in the development of UA project on terrains under electricity lines and a first baseline study on UA is being developed. The IPES/UMP-LAC adviser visited *Porto Alegre* for the strengthening of the Working Group on Waste Management. The topic of linking 3 environmental City Working Groups (waste, water & UA) was discussed to promote more integrated environmental city management. The city will incorporate itself as a member with the other 2 working groups and will establish a linkage between the different websites. They also expressed interest in integrating UA into the training course for regional development that the city is developing with the Federal University.
- **Cuba:** the Department of Physical Planning of the *City of Havana* and the NGO *FUNAT* requested the visit of UMP-LAC to discuss local potential for implementation and inclusion of UA into urban planning. Two IPES/UMP-LAC advisers travelled to Cuba: one (UA adviser) prepared with the local partners a first draft of a related project “UA at city-level:

integration of UA into urban planning”. The other (urban management adviser) provided follow up to the formulated project, especially on aspects related to local financing.

- **Dominican Republic:** the Municipality of Santiago de los Caballeros is developing a Municipal Programme on UA and has set up a municipal support structure for its implementation. A co-operation agreement has been signed between the municipality and UMP-LAC.
- **Ecuador:** the *Municipality of Cuenca* has incorporated UA as one of the activities to be financed through Strategic Local Investment Planning. The *Municipality of Quito* has included UA in its “Strategic Development Plan Quito 2002”. They developed a proposal for the establishment of a municipal programme on UA production, transformation and commercialization. Also, specific land use regulations for UA are being legalized and municipal funding (120,000 USD) for UA has been set-aside in the 2002 budget.
- **Guatemala:** UMP-LAC participated in two workshops in the *City of Quezaltenango* that aim to support development of an integrated environmental management proposal, including UA. The activity will build on experiences with gender inclusion and multicultural city management in the ongoing UMP-LAC City Consultation on gender and pluri-cultural governance.
- **Honduras:** the *Municipality of Puerto Cortés* has included UA in their environmental management strategy. Future planned activities are mainly focused on the strengthening of their Municipal Commission for Environmental Management (CONAM) and include a municipal request for capacity building through the formulation of 3 environmental programmes, one of them including UA.
- **Mexico:** the *Municipality of Texcoco* is aiming to strengthen the UA activities of their Rural Development Department by co-ordinating the LAC City Working Group on UA and Food Security. They also aim to disseminate municipal UA at national and regional levels and organize, in this context, a seminar on “UA in Local Policies” for the municipalities located in the northern part of the Federal District of Mexico.
- **Peru:** the Mayor of *Villa Maria de Triunfo – Lima*, has been in contact with UMP-LAC. After his participation in the regional seminar, he placed UA as a specific item on his municipal agenda. He elaborated a plan for the documentation of current municipal and community activities that will serve as a basis for further action planning. The municipality is requesting further support in this process. Members of the IPES/UMP-LAC team made two visits to *Villa El Salvador – Lima* (city consultation on elaboration of an integrated development plan for sustainable democratic governance). During their first visit, the team discussed the possibility of developing a UA programme linked to waste and water recycling. The second visit, however, concentrated on the implementation of a rapid baseline study to identify the characteristics of waste and water recycling programme. The direct involvement of IPES in the CEPIS programme and the elaboration of pig raising programme are two direct results of these visits.
- **Uruguay:** the *Municipality of Montevideo* is working on the inclusion of UA into their local Agenda 21 and requested a meeting with the National Congress of Local Governments to obtain their support of the Quito Declaration and discuss possibilities for the adoption of UA

in policy. They are especially interested in sanitary and environmental management of urban pig-raising. A relative project proposal was formulated together with the municipalities of Porto Alegre (Brazil), Havana (Cuba) and Villa El Salvador (Lima) and sent for financial support to URBAL 6.

Fund leverage⁵³

- In the entire project period, the total amount of 166,800CAD (106,048 USD) of additional funding to the original 330,300CAD (210, 000 USD: 150,830 CAD/IDRC & 150,000CAD /UNDP/UNCHS & the World Bank) has been obtained for the implementation of operational activities.

Lessons Learned

1. *Documentation and sharing of experiences*

The process of information outreach about UA experiences documented in the project has contributed to increasing knowledge on the notion and nature of UA in LAC municipalities and in regional and international expert networks. UA is spreading at the municipal level in the Region enabling the identification of innovative UA approaches in a more permanent way. In that sense the objective of documenting innovative practices, and sharing experiences as a way to disseminate knowledge to improve existing practices has proven to be a successful approach. Since UA at the municipal level is recent, there is certainly a need for further follow-up, documentation and systematization, especially to monitor impacts and its changing features as a result of urban dynamics.

2. *Facilitating policy formulation:* the project led to mainstreaming of UA into UMP & IPES programmes as well as into local governmental and NGO programmes. The six case studies have provided a series of elements for development of a new policy framework. The city consultation process has shown to be an efficient and participatory tool to support both action-oriented activities and policy formulation. The implementation of action projects triggered the development of a favourable legal and institutional framework, thus facilitating the development of the project itself. It is necessary to further elaborate practical tools that may support policy formulation in various fields related to UA, such as physical planning, economic investment, transformation and commercialization.

3. *General project management:* UMP-LAC's support capacities in terms of human and financial resources are insufficient to respond to the increasing demand for local project formulation, negotiation and financing. For this reason, an important component of the regional training course programme will be centred on supporting the participants in project formulation. Also, in future both the RED AGUILA and the LAC City Working Group have to be strengthened/trained to be able to respond to this demand and lessen dependence on UMP-LAC.

4. *General project development:* three bottlenecks were identified: access to land (physical planning), access to capital/credit and access to local markets. The determining one of those three is the access to land and the lack of facilitating policies, especially at the municipal

⁵³ Approximate figures, rate used for CAD currency was calculated on 19-08-2002 rates.

level. Generally, UA is not included into planning, land use or municipal zoning plans. Along with these three bottlenecks one of the main limitations of the programme so far has been its incapacity to reach specific segments of the urban poor: especially afro-latino, indigenous peoples and to a lesser extent the “new urban poor”. As a result a next phase targeting these groups will be proposed by UMP-LAC.

Publication List and Brief Review

Project reports

UMP-LAC. 2001. “Final Report, November 1998 – August 2001”. Urban Management Program, Quito & The Institute for the Promotion of Social Economy – IPES Peru.

UMP-LAC/IPES. 2001. “Final Report, June 2000 – June 2001”. Activities undertaken by the RUAF Regional Focal Point for Latin America and the Caribbean. UMP-LAC/IPES & IPES.

UMP-LAC. 2001. “Technical Progress Report, January 2001 – June 2001”. Urban Management Program, Quito.

This report has 8 annexes that include: preliminary proposal for the operational basis of the credit line; business plan for agro-industries; proposal for regulation of land access for UA; Quito general land use plan; UMP-LAC trip reports; project presentations in UMP catalogues; reporting of experiences in KIT Cuidades y Medio Ambiente; and leverage of additional project funding.

UMP-LAC. 2000. “Technical Progress Report, July 2000 – December 2000”. Urban Management Program, Quito.

This report has 8 annexes that include: Inter-actor Agreement/Action Plan for Quito, Ecuador; proposal for regulation of land access for UA; project monitoring format; summary of working group discussions on training in UA; UMP-LAC trip reports; proposed collaboration UMP-FAO; paper presented at the Community Gardening Conference in the UK; and leverage of additional project funding.

UMP-LAC. 2000. “Technical Progress Report, December 1999 – June 2000”. Urban Management Program, Quito.

This report has 9 annexes that include: UMP-LAC trip reports; city evaluation reports; systematization research process Quito – Ecuador; lessons learned, open questions and points for further research; participants list at the International Seminar in Quito; indicators for UA; co-operation agreement between UMP-LAC/IPES/ETC-RUAF; constitutional ACT REDPESA; leverage of additional funding; and Strategic Plan Quito 2000.

UMP-LAC. 1999. “Technical Progress Report, November 1998 – November 1999”. Urban Management Program, Quito.

This report has 9 annexes that include: questionnaire used in city diagnosis; first convocation on UA to LAC cities and local governments; list of cities that responded to UMP call for

submissions; list of pre-selected and interested cities; presentation and analysis guides on baseline studies and public policies and interventions in UA at the municipal level; and a memoir draft on capitalization and exchange in UA and food security experiences, Municipality of Quito.

Working papers:

Dubbeling, Marielle and Alain Santandreu. 2001. Diagnósticos Participativos de Agricultura Urbana: lineamientos metodológicos y conceptuales. Cuaderno de trabajo 86. Urban Management Program, Quito.

This paper is based on the analysis of four baseline studies in four cities of LAC that were part of this project. The four baseline studies were presented in the international workshop “Urban Agriculture in Cities of the 21st Century”. The document has 8 chapters that gradually introduce the reader to participatory diagnostics result analysis, identification of challenges, terminology, typologies, role in intervention programs and local planning, techniques and tools used.

UMP, IDRC, IPES, FAO & Metropolitan District of Quito. 2001. Urban Agriculture in Cities of the 21st Century – innovative approaches by local governments from Latin America and the Caribbean. Working paper 84. Urban Management Program, Quito.

This paper contains the proceeding of the international workshop. The document (15 chapters) is mainly a compilation of the 6 case studies and 4 baseline studies presented during the workshop. It includes background information about the UA and food security situation in the LAC region, synthesis of each study, major findings and recommendations. One chapter is dedicated to the Quito Declaration and the formation of the City Working Group. Ten chapters are dedicated to the presentation of each of the ten cases and baseline study commissioned to each local team.

Homem de Carvalho, João Luiz. 2001. O PROVE – Programa de Verticalização da Pequena Produção Familiar, Brasília – Brasil. Cuaderno de trabajo 83. Urban Management Program, Quito.

This paper represents the official publication of the PROVE project in Brasilia, which was one of the case studies selected. The project was an initiative of the Federal Government of Brasilia that supported small rural and peri-urban producers with alternative credit, technical assistance and the formation of micro-enterprises.

Case/baseline studies⁵⁴

Albán, Kléver, et al. 2000. “Baseline Study on Urban Agriculture in the City of Quito”. Quito, Ecuador.

Arias Hernandez, Gabriela. 2000. “Analysis de las Políticas Públicas en la Agricultura Urbana: Caso Texcoco, México”.

Bandeira dos Santos, Petrone. 2000. “Evaluacion Implementación de los Estudios en Agricultura Urbana, Teresina, Brasil”. Teresina, Brasil.

⁵⁴ Summaries of Case Studies are also available in file besides complete documents.

- Cabannes, Yves and Marielle Dubbeling. 2000. "Urban agriculture and urban management: innovative approaches by local governments and cities – a LAC perspective". Urban Management Program, Quito.
- Carigano, Carlos (Alcalde), et al. 2000. "Evaluación: Implementación de los Estudios en Agricultura Urbana, Camilo Aldao, Argentina". Camilo Aldao, Argentina
- CEARAH – Periferia. 2000. "Políticas Públicas e Suas Intervenções a Nivel Municipal em Agricultura Urbana na Cidade de Teresina – PI, Brasil – Estudo de Caso: Hortas Comunitarias". Teresina, Brasil.
- Cruz, María Caridad. 2000. "Sistematización de Políticas Municipales e Intervenciones en Agricultura Urbana". Programa de Agricultura Urbana de Cuenca (PAU), Ecuador. Cuenca, Ecuador.
- Cruz, María Caridad. 2000. "Evaluación: Implementación de los Estudios en Agricultura Urbana. Programa de Agricultura Urbana de Cuenca (PAU), Ecuador". Cuenca, Ecuador.
- Dubbeling, Marielle and Yves Cabannes. 2000. "La Globalización y Urbanización y sus Efectos sobre las Ciudades: Justificación de la Agricultura Urbana." (synthesis of case study results). Urban Management Program, Quito.
- Fernandes Fortes Filho, Paulo. 2000. "Políticas Públicas e Suas Intervenções a Nivel Municipal em Agricultura Urbana na Cidade de Teresina". Teresina – PI, Brasil.
- Gonzalez Novo, Mario. 2000. "Institucionalización de la Agricultura Urbana en Ciudad de la Habana". Grupo Agropecuario Provincial de la Ciudad de la Habana, Cuba.
- Homem de Carvalho, João Luiz. 2000. "Programa de Verticalização da Pequena Produção Familiar – PROVE". Brasília, D.F., Brasil.
- Lopes Gonsalves, Salvador and Lia Suzuki. 2000. "Evaluación: Implementación de los Estudios en Agricultura Urbana, Curaça, Brasil". Curaça, Brasil.
- Reyes Chirinos, José, et al. 2000. "Estudio sobre Agricultura Urbana en Puerto Cortés, Honduras. Puerto Cortés, Honduras".
- Santandrea, Alain, et al. 2000. "La Agricultura Urbana en la Ciudad de Montevideo. Montevideo, Uruguay".
- Suzuki, Lia, et al. 2000. "Diagnostico da Agricultura Urbana de Curaça. Curaça, Brasil".
- Terrile, Raul Horacio and Silvana Mariani. 2000. "Análisis de Políticas Públicas de Agricultura Urbana en Camilo Aldao en el Marco de un Desarrollo Local Sustentable". Camilo Aldao, Argentina.
- Villalba Andrade, Mateo. 2001. "Programa de Acciones Prioritarias Agricultura Urbana y Seguridad Alimentaria en el barrio El Panecillo de Quito: Informe preliminar sobre las condiciones de crédito que se requieren para sostener una micro-empresa modelo de producción, transformación y comercialización de Agricultura Urbana" (also in Technical Progress Report January-June 2001). Quito, Ecuador.

Other documents

- Cruz, María Caridad. 1999. "Cuba: Resultados, problemas y retos de la agricultura urbana" in La Era Urbana, Suplemento para América Latina y el Caribe, 1/1999: viii-x.

- Del Rosario, Pedro Juan. 1999. "República Dominicana: La agricultura en la ciudad" in La Era Urbana, Suplemento para América Latina y el Caribe, 1/1999: xi-xiii.
- Dubbeling, Marielle. 2001. "A Framework for Facilitating Planning and Policy" in Urban Agriculture Magazine, 5/2001:19-22.
- Fuentes, Alejandro. 1999. "Ecuador: Gestión ambiental en sectores precarios urbanos" in La Era Urbana, Suplemento para América Latina y el Caribe, 1/1999: xvii-xviii.
- Homem de Carvalho, João Luiz. 2001. "PROVE – Small Agricultural Production Verticalisation Programme" in Urban Agriculture Magazine, 5/2001:54-55.
- Homem de Carvalho, João Luiz. 1999. "Brasil: Combatir a la pobreza ayuda a dinamizar la economía" in La Era Urbana, Suplemento para América Latina y el Caribe, 1/1999: xiv-xvi.
- Montero, Alejandro. 1999. "Chile: Seguridad alimentaria y agricultura orgánica urbana" in La Era Urbana, Suplemento para América Latina y el Caribe, 1/1999: xxii-xxiv.
- Mougeot, Luc J.A. and Yves Cabannes. 1999. "El estado de la agricultura urbana en América Latina y el Caribe" in La Era Urbana, Suplemento para América Latina y el Caribe, 1/1999: iv-v.
- Moscoso, Julio. 1999. "Perú: El uso de aguas residuales en la agricultura urbana" in La Era Urbana, Suplemento para América Latina y el Caribe, 1/1999: xix-xxi.
- Patiño, Fernando. 2001. "Contribution of UMP and its Partners to the Global Campaigns" in UMP in brief, 1/2001:8.
- PGU-ALC. 1999. "Foro Regional: Comentarios de Alcaldes Lationamericanos y caribeños sobre la agricultura urbana" in La Era Urbana, Suplemento para América Latina y el Caribe, 1/1999: vi-vii.
- PGU-ALC. 1999. "Agricultura Urbana y Seguridad Alimentaria de las ciudades: El estado de la agricultura Urbana en América Latina y el Caribe" in La Era Urbana, Suplemento para América Latina y el Caribe, 1/1999. Banco Mundial, Washington D.C.
- PGU-ALC. 2000. "Declaración de Quito (official original Spanish text). International Seminar Agricultura Urbana en las Ciudades del Siglo XXI, 16-20 April 2000". Urban Management Program, Quito.
- PGU-ALC. 2000. "Resoluciones y seguimiento al seminario Agricultura Urbana en las Ciudades del Siglo XXI. 16-20 April 2000". Urban Management Program, Quito.
- Santandreaux, Alain. 2001. "Rapid Visual Diagnosis: A rapid, low cost, participatory methodology applied in Montevideo" in Urban Agriculture Magazine, 5/2001:13-14.
- Santandreaux, Alain, et al. 2002. "Biodiversity, Poverty and Urban Agriculture in Latin America" in Urban Agriculture Magazine, 6/2002:9-11.
- UMP-LAC. 2000. "Declaration of Quito, (official translation to English). International Seminar Agricultura Urbana en las Ciudades del Siglo XXI" 16-20 April 2000. Urban Management Program, Quito.
- UMP-LAC. 2000. "Internal evaluation of the seminar on Agricultura Urbana en las Ciudades del Siglo XXI". Urban Management Program, Quito.

II.2. Regional Training Course on Urban Agriculture (100641)

Project Summary

This research activity developed as a response to training needs on policy and research for the integration of UA into urban and municipal management strategies in Latin America and The Caribbean (LAC). The expected duration of the activity was 15 months, however a six-month extension was requested in order to produce training materials of better quality than originally anticipated. Presently, the expected duration of the project is 21 months, from February 2001 to November 2002. The total cost of the project is 382,600CAD. IDRC's contribution to this activity was 241,300CAD during the first phase and a supplement of 36,000CAD for a second phase. The remaining 105,000 CAD is parallel funding from the following institutions: ETC Andes B.V (35,000), FAO Regional Office for LAC (35,000) and the Natural Resources Institute (35,000). The recipient and executing agency is the Urban Management Program – LAC Office, a UNDP initiative executed by the UNCHS–Habitat. The objective of the course is to strengthen local research and intervention capacities in UA, and provide course participants with concrete guidelines and methodologies for planning and implementation of UA initiatives in urban development. A summary of project results, objectives and impacts are presented in Appendix VII.

Background

The potential of UA for sustainable urban management is increasingly recognised by cities in LAC and by national and international organizations working in the region. Several initiatives like the formation of the Latin American Network for UA Research (Red AGUILA) and the programme “Urban Agriculture and Feeding the Latin American and Caribbean Cities”, managed by IDRC, the Urban Management Program (UMP-LAC) and IPES (Promotion of Sustainable Development) have been recently set-up. A systematization of the results of these initiatives allowed for an analysis of the role that UA can play in addressing urban poverty, improving the environment and promoting participatory governance.

In the LAC Region different successful municipal and community projects, programs and policies exist related to knowledge as well as the exchange of information on UA. These projects, as confirmed by the local actors themselves, have been crucial to the development of UA in the region. During the first and second AGUILA conferences in Havana (1988 & 1999); the Project Impacts Evaluation Workshop in San Jose (Costa Rica, 1999); and the international seminar-workshop “Urban Agriculture in the Cities of the XXI century” held in Quito (2000), participants repeatedly expressed the need to further develop training and capacity building in UA in the region. However, the need of local governments and other urban actors for training was more clearly defined during the Quito workshop. Training was recognized as an indispensable mechanism to link local governments and the community in the formulation of public policies, the elaboration of participatory baseline and case studies and the management of programmes and projects. It was also proposed that training activities evolve around project

development (formulation & management), communication and training methods and the creation of opportunities and spaces for the exchange of information. That being said, IDRC and IPES/UMP-LAC embarked on a regional training course oriented towards cities recognising the importance of UA in their sustainable socio-economic development.

The Regional Training Course on UA took place in the UMP – LAC headquarters in Quito, Ecuador from November 5 to 24, 2001. The development of the course involved various processes including preparation and implementation of two preparatory workshops with moderators, advisors and Course coordinators; elaboration of the final pedagogical packages to be used in the Regional Training Course; preparation and implementation of the Training Course and the final external evaluation of the Course. The overall purpose of the preparatory workshops was to develop and prepare course components such as methodological and pedagogical framework, logistics and selection of participants for the course.

AGUILA Network sent one hundred invitations to potential course participants via electronic mail and personal communications. A total of 18 applications were received and evaluated during the second preparatory workshop. The evaluation of the 18 applications (dossier and projects) was made according to evaluation sheets developed by the project technical coordination. Each moderator scored the applications and selected the 10 best. All opinions were shared and eight applications were selected by consensus. The last two applications were selected after discussion and consideration of aspects such as regional representativity and potential exchange between participants among others. Finally it was agreed to add the two applicants from Quito to the list, considering that Quito was hosting the event and no extra travel or lodging costs would be involved. A basic feature in this process was the selection of city couples composed by one representative of the local government and another of civil society whom together prepared and presented a municipal UA project proposal. As a result of the rigorous selection procedure, the participation of persons with relevant knowledge and genuine interest in UA was assured. This was a very strategic and innovative aspect of the course. The idea to pair up a government official with a civil society representative was intended to help introduce UA into municipal planning and policy making.

The course was composed of three modalities comprising seven modules⁵⁵, a city case study review (Quito) and each participating teams' city project proposal. From the organizers and participants' point of view, this training course was experimental and innovative in the LAC context due to its regional focus, the various aspects of UA explored, the selection process and the three pedagogic modalities implemented. Methodological innovations were also made in a more global context. This approach had been successfully applied by the Institut Sénégalais de Recherches Agricoles (ISRA) in West Africa, however, in LAC, it was considered innovative in

⁵⁵ (1)UA: planning and land use management; (2) UA: characterization, dynamics and impacts; (3) Research and intervention in UA: methodological instruments and analysis; (4) UA and food security; (5) Production chain: transformation, commercialization and consumption of UA; (6) Sanitary management of household wastewater in UA; (7) Management and utilization of municipal and household solid waste in UA

terms of targeted audience, emphasis on urban planning methodologies and participatory municipal management. The LAC experience also differed from the African experience in that gender analysis was only included after the first planning workshop, whereas in West Africa it was included from the beginning.

At present, post-course activities in the region have demonstrated that the impacts have gone beyond participation and are taking a more pro-active turn through joint initiatives in the development of UA projects and exchange of expertise and information among participants (see results and impacts section).

Objectives

- **General**

The general objective of the project is to develop a training process, which will improve regional conceptual and methodological capacity. This process will be done through designing; testing and evaluating materials that will enable key actors to diagnose and intervene (through policies, programs and projects) on UA related issues. Actors will then be able to manage Latin America and Caribbean municipalities in a better way.

- **Specific**

- a. To run regional course planning workshops, which will assess, discuss, refine and adjust a regional course proposal. This will include general objectives and approaches, module contents, evaluation process, selection of instructors and participants as well as course schedule and logistics;
- b. To generate methodological guides and training materials on particular UA issues as addressed in the different thematic modules of the course;
- c. To deliver the first regional training course on in Latin America and the Caribbean;
- d. To edit, publish and disseminate a training manual on UA, aimed at researchers, municipal policy advisors and makers in the region;
- e. To create a space within the Latin America Urban Agriculture Research Network (AGUILA) for region-wide exchanges of municipal experiences in UA, which will facilitate long-term links among city actors in LAC;

Methodology

The development of this training activity involved three main processes that made exhaustive use of participatory methodologies and tools. The use of three different pedagogical modalities to address existing UA policy formulation and methodological needs in the region proved to be innovative and effective in meeting participants' expectations and addressing issues discussed. In turn this contributes to the overall goal of building and developing UA capacities in the LAC region. These processes were:

1. Planning process

This process started with an official invitation to participate in the Regional Training Course on UA. The invitation was followed by the organization and execution of two preliminary workshops for:

- the definition and approval of course objectives, themes, modalities and outcomes;
- the selection of participants and projects;
- the validation of pedagogic methodologies and material; and
- the definition of different actor's roles, such as co-ordination, moderators, external advisors and participants.

The tools used in the preliminary workshops included working groups, plenary/group discussions, field visits, didactic material, distribution of information using e-mail, visual demonstrations (graphics, audio-visual, group dynamics), handouts, presentations and debates.

2. Implementation process

This process refers to the execution of the course as the central activity for this project. The methodology for the Regional Training Course consisted of a series of training modules that made use of various mechanisms and instruments, which effectively addressed a pre-selected audience that included representatives of municipal governments, NGO professionals and researchers from the LAC region. Course modules and contents were adjusted, refined and finalised in due course of (planning and implementation stage) the activity. The course lasted 3 weeks on a 6 day week totaling 120 hours of training and included the following components: development of 7 modules; reviewing selected aspects of a case study (Quito case); individual studying; consultations at the Documentation Centre; adjustment of participant's projects through pair-work with institutional partner; and social events like cultural evenings and touring of historic sites.

The course curriculum combined three pedagogical modalities⁵⁶ using various methodological strategies both presented in the following table resulting from the course evaluation.

Graph 6: Methodological strategies

Modalities	Specific objectives	Mechanisms & Instruments	Hours
Modules (7)	Acquisition of individual knowledge	Master class Group dynamics Working groups, Reflection	80
A Case study review (Quito case)	Group knowledge construction	Magisterial talks Field visits & interviews Systematization & restoration of info. Proposal presentation to the Municipality of Quito	20
Participant's cities projects	Change of vision through project elaboration & modification.	Tutorials with moderators Participant's knowledge exchange Pair-project work	20

3. External evaluation process

⁵⁶ The modalities called "Project" & "City-case study" are a strategy of teaching-learning that has the quality to integrate theory & practice and contribute to reflection on and the capacity to (re) formulate proposals during a short period of time.

The evaluation process was planned ahead of the course and designed during the first week of its implementation. It was a participatory process where project co-ordinators and moderators, along with the evaluator, were able to refine evaluation material, contents and tools. Using quantitative and qualitative tools, the strategy applied allowed the collection of information on curriculum effectiveness, pedagogic modalities' functionality, and impact potential of the training event. The evaluation was completed within the timeframe of the course (3 weeks) and included the observation of participants, questionnaires (150) and focus group interviews (20). Course organizers helped out the evaluation of the course through evening meetings assisted by co-ordinators, the evaluator and moderators; Documentation Centre registry, photocopier, and the application of experience dynamics to evaluate group bonding (spider web exercise). For results on course evaluation and impacts please refer to the Impacts and Lessons Learned sections.

Results

The study resulted in the following:

Working with cities and local actors

- A three-week training course was held in which 24 participants from 11 cities of 8 different countries and 8 moderators of 7 different nationalities were involved.
- Various actors from Quito (community & government representatives) involved in implementation of several training sessions and reflection on UA development in the Municipality.

Elaborating thinking on urban issues

- Information sources for module development were identified.
- An Aide Memoire for the second preparatory workshop was formulated and distributed.
- A report on each of the two preparatory workshops was produced and distributed.
- A preliminary report on the selection process and procedure produced and distributed.
- A CD-ROM containing all “raw” course materials produced and distributed among the course participants.
- An external evaluation report on the training course produced.
- A whole training kit has been developed but not finalized yet. It includes all the modules, CD-Roms, videos and other relevant materials.

Mobilizing actors at local, national and regional level

- A regional team of moderators contracted and organized.
- Support of external advisers assured through on-line and physical participation.
- An electronic list-serv established to facilitate communications among all moderators and external advisers.
- 12 City teams working on implementation of elements learned during the training course or preparing the replication of (parts of) the training course at national or sub-regional level.

Transforming situations through projects and policies

- A first preparatory workshop implemented, during which the general course parameters and specific characteristics of each training module were defined and agreed upon.
- A second preparatory workshop implemented, during which the pedagogic course modalities, the day-to-day course planning and the interaction between moderators were defined and agreed upon, and the course participants were selected.
- Eleven projects were improved after the Regional Course.

Achieving sustainability over time (Institutional anchoring)

- Linkages between the training course and other UMP-LAC activities were effectively put to use.
- Interaction between various regional/international UA institutions and networks elaborated and promoted.

Impacts:

The project had impacts in the following areas and actors:

Human resources development

- A total of 45 people were involved in the training course.

Technical coordinators/moderators

- The technical project co-ordinators and the course moderators involved increased their capacity in co-ordination and implementation of regional training courses and the construction of dialogue on UA that is pertinent to the reality of the participants and has a regional and multi-dimensional perspective. They are now in a good position to replicate the course on a sub-regional or national level, thus contributing to the strengthening of a regional network on UA.
- The UMP-LAC staff and 3 students from Peru, Ecuador and the USA involved in the course provided logistical support, and seized the opportunity to get more familiar with the concept and aspects of UA.

Participants

- The required proposal formulation for course participation encouraged a more critical reflection on local UA development by local partners, specifically on current dynamics of UA in their cities, facilitation of development, interventions or policy framework needed, and the role of local actors in the process.
- Twenty-four course participants from eight different countries (two from the Caribbean & six from LA) and 24 different institutions were trained in new concepts and tools on UA. They form part of a network of actors that will amplify and deepen the thinking and action on UA from an urban management perspective (strengthening links between local government representatives and civil society organizations).

Institutional capacity building

- UMP-LAC & IPES strengthened their institutional capacities related to organization and elaboration of regional courses.

- The direct involvement of the AGUILA Regional Technical Secretariat and the co-ordinator of RED AGUILA Mexico, strengthened their capacity in internalizing a regional vision into AGUILA's work, incorporating a broader concept of UA, use of participatory methodologies and working under a different institutional perspective (relating themselves more directly with local government representatives).

Effective local partnerships

- The association between government and civil society representatives has energized local partnerships. In *Cuenca (Ecuador)*, in previous years, the municipal UA working team had not been able to further secure its relationship with civil society organizations and had increasingly become an isolated government programme. However, due to the application procedure requirements they were obliged to review this dynamic and re-establish working relationships with the local NGO Habitierra. The participation of both, the *Municipality of Belo Horizonte (Brazil)* and the local NGO REDE in the course re-invigorated discussions concerning government support to the NGO community programme on UA. These discussions have led to common project development and the signing of the first inter-actor agreement that will facilitate REDE to support UA programmes and training of staff. In *Cienfuegos (Cuba)*, contacts between the Municipality and the University have been strengthened. The Mayor has been invited to sign various co-operation agreements (including one to be signed with UMP-LAC & IPES) and collaborate more closely with the University.

Gender Focus

- Specific attention was paid to gender as part of the module on participatory research and intervention methodologies. The 3 hours available for this specific session were considered to be insufficient by the participants.
- A gender focus was incorporated in each one of the modules. Particularly, in terms of motivation to analyse and incorporate gender as a crosscutting issue, conceptualise the role of men and women in UA, application of gender analysis in discussing food security, and use of appropriate language.
- The external evaluator from CEAAL (The Consejo de Educacion de Adultos para America Latina) also evaluated the gender component of the course. Gender analysis was one of the topics that received particular attention in the reformulation of the participant's project proposal.

Contribution to multi-disciplinarity

Multi-stakeholder involvement

- In general the government representatives benefited from the diversity, participation, inclusion and equity expressed by the representatives of civil society. Civil society representatives shared their experiences and visions integrating socio-political interests and management on a scale greater than that of a project.

- The course was attended by 12 local/federal government representatives (among them 3 councillors), 6 NGO representatives, 1 CBO representative (producers organization), 3 university representatives and 1 representative from a regional NGO/research network.

Inter-regional and multi-disciplinary team of moderators and participants

- The presence of participants and moderators from various backgrounds and disciplines enriched the course through the diversity of visions, experience and contents, and resulted in interesting debates and reflection on various holistic dimensions of UA from different perspectives (producers, NGOs, politicians).

Scientific and methodological advances

Related to the course itself

- The training course was experimental and innovative because it focussed on UA and related concepts, was strategic with regards to the selection of the participants and implemented three new pedagogic strategies.
- With regards to the course curriculum, relatively new concepts and methodological approaches to UA were introduced to the participants. These included, land use planning, gender analysis, participatory intervention strategies and wastewater reuse.
- The modalities called “Projects” and “City case study” involved a strategy of teaching – learning that has the quality to integrate theory and practice, encourage reflection and build the capacity to (re)formulate proposals during a short period of time.
- The three modalities used were considered complementary, allowed for a more participatory and constructive educational approach while offering the participants concrete tools to implement aspects learned in their own cities and programmes.
- The rigorous selection procedure that followed assured the presence of qualified participants and the selection of projects with a high probability of being implemented.

With respect to the impact of the course on scientific thinking

- The course has shown that UA and urban environmental management are effective strategies for poverty alleviation and improved urban governance. It has contributed to the mainstreaming of UA as a catalyst for multi-thematic approaches to urban management

Research results utilization

In the cities and on (inter) regional level

- UMP-LAC has been requested to support the planning and implementation of new training courses at local, national and sub-regional levels by the Municipalities of Quito (Ecuador), Santiago de los Caballeros (Dominican Republic), Cienfuegos (Cuba), Belo Horizonte (Brazil) and Camilo Aldao (Argentina). Presently, UMP-LAC and IPES are producing a series of training aids on UA with the objective to form a group of resource persons and cities that can reproduce the course for others.
- Exchange of experiences and staff is taking place among civil society representatives and municipalities in the region (PROVE/Brazil-Quito, Cienfuegos representative-Zonal Administrations of Quito, Camilo Aldao-Quito-CEPIS) that participated in the training course. The course also has raised regional visibility on the topic and generated initial

exchanges with other regions (Philippines and Zimbabwe). It has also stimulated thinking on potential development of a distance education course.

- Resource mobilization continues to be carried out by the Municipalities of Montevideo (Uruguay) and Quito (Ecuador) through the formulation and presentation of project proposals to donor agencies. Havana (Cuba) has submitted their proposal to be negotiated for financial support as part of the FUNAT programme on Urban Sustainability.
- Planning and implementation of concrete activities or political interventions at the city level are taking place in various municipalities of the region. Governador Valadares (Brazil) is creating a forum on food security while Villa El Salvador (Peru) has initiated a pilot project on organic waste recycling for pig raising and vegetable production with disabled children and youth. In Quito and Rosario processes of up-scaling and implementation of municipal UA programmes are being set into place with the guidance of UMP-LAC; and Belo Horizonte (Brazil) is looking into the possibilities of signing user agreements for the use of three municipal and private land areas for UA production and wastewater recycling.

Technical and policy uptake of the topic of UA by UMP-HABITAT

- The course has been a catalyst in the up scaling of UMP supported projects and programmes at city and municipal levels. It has stimulated the establishment and implementation of a Municipal Programme on UA and Micro-credit in Quito. UA as a theme will also be incorporated to various degrees into other scaling-up processes UMP-LAC is supporting in Bogota – Colombia (neighbourhood improvement) and Maracaibo – Venezuela (Funds for Social Inclusion).
- The work has generated thinking on the establishment and incorporation of UA related indicators in a project called “Monitoring intra-city conditions and trends as input to poverty reduction and better local governance” co-financed by the Global Urban Observatory and UMP-LAC. Equally, it has had an impact on the recognition of UA as an element of economic development within HABITAT, resulting in a direct interest and commitment to be involved in a new project on “Micro-credit and investment for UA”.

Fund leverage

- Additional funding for the amount of 19,110USD (29,693CAD⁵⁷), including in-kind contributions, was obtained during the total project period. Contributions came from participant regional organizations, host cities and course coordinators/organizers.

Lessons Learned

1. Project management was very intensive with regards to stimulating communication and co-ordination at multiple levels between: the members of the co-ordination team, the moderators and the prospective students. It was necessary to work full-time with several persons (4) on daily, management activities. Future courses should take into consideration the high demand on human resources.
2. The course was considered a success by participants and moderators because of the commitment of the course-participants, the quality and relevance of their projects; a course

⁵⁷ Approximate figure in CAD calculated with 27-08-2002 US currency rate.

curriculum that responded to a concrete demand and reality, the use of three different but complementary pedagogical modalities that were instrumental in the increase of participants' knowledge and the provision of know-how elements to apply that knowledge. Other important factors include, the quality and mobilization of existing human and material capital; quality of logistical organization; attention given to participants at the personal and tutorial course level; variety in the course program; flexibility of course organizers, teamwork and great efforts by the co-ordinating team, support staff and moderators. These factors of success constitute pre-requisites for replicating the course in other locations.

3. There is sufficient local expertise and demand for the formulation and establishment of municipal programmes on UA. However, it is important that UMP-LAC and IDRC provide further support to assure funding of the projects and provides methodological, political and technical advise for the process and implementation of up scaling.

Publication List and Brief Review

Project reports

Amaluisa Fiallos, Cecilia and Saya Saulière. 2002. "Informe de la Evaluación del Curso Regional de Investigación – Acción y Gestión de la Agricultura Urbana en las Ciudades de América Latina y El Caribe, Quito – Ecuador, 5 al 24 de noviembre del 2001." CIID &PGU – ALC/IPES, Quito, Ecuador.

This document contains 6 annexes including evaluation methodological design, questionnaires, the three types of pedagogic modalities used (each presented in a separate annex), evaluation of moderators and interviews with participant pairs.

Dubbeling, Marielle. 2001. "Technical Progress Report, September 2001 – March 20002". IPES/UMP-LAC, Quito.

This report contains 3 annexes including detailed course planning, an example of evaluation sheet for project improvement and letter from the Municipality of Rosario addressed to UMP Co-ordinator.

Dubbeling, Marielle. 2001. "Technical Progress Report, March – August 2001". IPES/UMP-LAC, Quito.

This report contains 3 annexes including a list of applications and main project themes, preliminary report on participants' selection process and aide memoire for the second preparatory workshop.

Dubbeling, Marielle and Fernando Patiño. 2001. "Informe de Evaluación del Primer Taller Preparatorio, Quito, 19 a 22 de abril – 2001. PGU-ALC/IPES.

This report contains 10 annexes including the list of participants, aide memoire for the workshop, re-formulated objectives, general roles and responsibilities, draft proposal for module content

and design, course organization by theme, format for module description, participants' selection process and criteria, proposed convocation and detailed course planning.

Dubbeling, Marielle. 2001. "Curso Regional de Capacitación en Agricultura Urbana: Informe del Primer Taller Preparatorio, Quito, 19 al 22 de abril – 2001. IPES/UMP-LAC, Quito, Ecuador.

Ibid.

IDRC & IPES/UMP-LAC. 2001. "Curso Regional de Investigación – Acción y Gestión de la Agricultura Urbana en las Ciudades de América Latina y El Caribe, 5 al 24 de noviembre del 2001." PGU – ALC, Quito, Ecuador.

Course pack and module bibliography prepared for workshop participants that contains background information on the development of UA networking activities in the LAC region, information on workshop organising and collaborating institutions, list of participants, participants' project proposals by city, and course modules.

IDRC & IPES/UMP-LAC. "Curso Regional de Capacitación en Agricultura Urbana:, Primer Taller Preparatorio", Quito, Ecuador del 19 al 22 de marzo del 2001: Aid Memoir.

IDRC, IPES/UMP-LAC & AGUILA. "Curso Regional de Investigación – Acción de la Agricultura Urbana en las Ciudades de América Latina y El Caribe: Informe de avance". PGU-LAC, Quito.

Santandreu, Alain and Marielle Dubbeling. 2001. "Curso Regional de Capacitación en Agricultura Urbana: Informe del Segundo Taller Preparatorio, Texcoco, Mexico del 5 al 7 de septiembre de 2001. IPES/PGU-ALC, Quito, Ecuador.

Other publications

CD-ROM of course proceeding – Curso Regional de Investigación – Acción y Gestion de la Agricultura Urbana en las Ciudades de América Latina y el Caribe, 5 – 24 de noviembre de 2001 en Quito, Ecuador.

Videos used in the Curso Regional de Investigación – Acción y Gestion de la Agricultura Urbana en las Ciudades de América Latina y el Caribe, 5 – 24 de noviembre de 2001 en Quito, Ecuador.

- ❑ AU Como Satisfacer Multiple Extracto de "Las Huertas de la Gente"
- ❑ Agrofloresta – Uma Semente para Agricultura Familiar no Vale do Rio Doce
- ❑ Earth Report V-Land Rites
- ❑ Quintais Agroflorestais uma Propota Ecologica e Economica
- ❑ Sembrando Alternativa ProHuerta

"Noticias generales: Curso Regional de Capacitación en Agricultura Urbana" in breves del PGU: 8/2001, pp 2. PNUD/PGU – CNUAH (Habitat).

II.3. Integrated System for the Treatment and Recycling of Waste Water in Latin America: Reality and Potential (100123)

Project Summary

This project activity involved extensive research on the treatment and use of domestic wastewater in 19 Spanish-speaking countries⁵⁸ of Latin American. The total cost of the project was 620,449CAD, of which 490,725CAD was granted by IDRC and 129,724 by the recipient and implementing agency Centro Panamericano de Ingenieria Sanitaria y Ciencias Ambientales (CEPIS), which is the regional research centre of the WHO. Project activities were carried out by highly qualified professionals in this field with the collaboration of national institutions and the technical and strategic support of PAHO/WHO representations in participating countries. The expected duration of the activity was 2 ½ years, from August 2000 to December 2002. The aim of the project was to identify critical issues to be addressed in the planning and management of integrated systems for the treatment and re-use of wastewater for urban and peri-urban agriculture. Research activities took place in various steps and included the implementation of 19 national inventories, 20 general studies of integrated systems in the region, 10 complementary studies and 4 pre-feasibility studies. Information gathered during these steps contributed to the enhancement of CEPIS software on the topic and also generated an important database and preliminary information on the state of wastewater treatment and reuse in Latin America. All this information has been made available by CEPIS through the project web site, workshops and publications. A summary of project results, objectives and impacts are presented in Appendix VIII.

Background

The treatment and recycling of domestic wastewater presents both a challenge and an opportunity in Latin America. It can be seen as a challenge, because about 80% of untreated wastewater is currently dumped into the environment or used untreated for agricultural purposes; this presents a health threat of major proportions to many localities. On the other hand, treated wastewater is an opportunity because it is an economically and ecologically valuable resource. Treated wastewater can significantly increase the availability of water for agricultural purposes where supplies are scarce, such as the Pacific Coast of South America or North-Eastern Brazil. Domestic wastewater is also rich in nutrients, which can obviate the need for synthetic fertilisers.

Utilities, governments and technical institutions in the Region are stepping up their efforts to treat urban domestic wastewater appropriately and to reuse treated effluents in agricultural production. However, there remain some major hindrances for integrated systems of water recycling to be adopted more widely and be made more viable. These include the following:

- a conservative orientation on the part of involved parties in favour of "modern" systems of water treatment based on treatment exclusively for sanitation purposes;

⁵⁸ Mexico, Cuba, Dominican Republic, Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, Panama, Colombia, Ecuador, Peru, Bolivia, Venezuela, Brazil, Argentina, Chile, Uruguay and Paraguay.

- biases in favour of imported technology, encouraged by aid agencies;
- emphasis on removal of residual organic matter as a criterion of water treatment, based on experience in developed countries;
- poor management of stabilization ponds, many of which are overloaded;
- lack of public involvement in the choice of technologies and approaches;
- lack of adequate legal and regulatory frameworks in most countries;
- insufficient documentation of experiences in different countries to draw lessons from and to create a critical mass of knowledge in favour of integrated approaches;
- insufficient resources for the dissemination of information and the testing and promotion of new approaches.

This project enabled CEPIS to organize and document regional experiences with treatment and recovery systems, to identify critical elements required for efficient integrated systems, make recommendations to this effect, and disseminate both the examples of good practices and recommendations for appropriate design and implementation of new integrated systems.

Research activities went through four steps and they included:

- an inventory of systems currently in operation (national inventories);
- a review on the experience of 20 sites chosen to illustrate different combinations of treatment and/or recovery of domestic wastewater (general studies);
- an evaluation on the experience of ten of these sites (complementary studies); and
- the production of four pre-feasibility studies.

This project complements another multi-country project supported by IDRC, Participatory Impact Evaluation Methodologies for UA (004486), which examined a range of other (non-wastewater) urban agricultural interventions in several countries of the region.

Objectives

- General

The objective of the project is to document and analyse Latin American and Caribbean experiences in domestic wastewater treatment and recovery, recommend integrated design and implementation strategies and identify new opportunities.

- Specific

The specific objectives are as follow:

- a. To establish and document a typology of treatment and /or recycling systems found in the region;
- b. To broadly describe and analyse 20 cases of water management systems (with and without treatment, with and without recovery), assessing their adequacy and appropriateness from various perspectives, including: technical and economic criteria, their impact on the environment, organizational considerations, strong points and weaknesses, and replicability;

- c. To describe and analyse 10 of those cases in greater detail, using the same criteria as above, in addition to a more detailed analysis of environmental, economic and social impacts, and analysis of factors important to the success of these systems from a regulatory, institutional and socio-economic perspective;
- d. To produce four pre-feasibility studies for the implementation or improvement of integrated systems of wastewater treatment and recovery;
- e. To develop and test an approach for the assessment of integrated systems of wastewater treatment and recovery;
- f. To identify basic factors essential to the success of integrated systems of wastewater treatment and recovery, with special attention being paid to regulatory, institutional and socio-economic requirements;
- g. To disseminate research results and policy recommendations to as wide a range of users as possible in the region; and,
- h. To strengthen the AGUILA network by actively involving its members and other researchers associated with the project in the execution and dissemination phases.

Methodology

Using mostly quantitative methods and tools, activities in this project went through four steps:

Graph 7: Methodological framework

Step	Purpose	Methodological tools	Criteria
Regional inventory	To provide an overview of current experiences by conducting an inventory of systems in the Region, and establishing a typology of treatment	-Guidelines (4) with corresponding instructions -Selection of an initial sample of 20 case studies in 8 countries	-Typology of treatment systems based on potable water supply; sewer usage; and domestic wastewater treatment, disposal and agricultural use
General studies	To review the experience of 20 domestic wastewater management sites representative of different combinations of treatment and/or recovery of domestic wastewater	-Terms of reference -Reference guide -Reference model -Software REUSE -Technical visits -User manual -1 st workshop: selection of 10 cases for the following phase	-Nature of treatment/ recovery system involved -Geographical location -Type of climate, and -City size/population: very small (2-10,000), small (10-100,000), intermediate (100,000-1M), big (>1M)
Complementary studies	To evaluate in some detail the experience of ten of the twenty sites.	-Terms of reference -Reference guide -2 nd workshop	
Pre-feasibility studies	To produce 4 pre-feasibility studies for integrated treatment and recycling projects including a pilot phase.	-Terms of reference -Reference guide -3 rd workshop	-Selection of representative case for each typology -Report delivery & presentation in the workshop -Better development of the preliminary proposal -Greater representative of the 4 categories -Greater & better support from relevant institutions -Flexibility to local conditions -Greater number of votes from workshop participants

Regional inventory

Inventory data collection was based on four established typologies for wastewater: **T – R** (with treatment, with recycling): 8 cases; **T – NR** (with treatment, no recycling): 4 cases; **NT – R** (no treatment, with recycling): 4 cases; **NT – NR** (no treatment, no recycling): 4 cases. The size of the sample in each typology was proportionally distributed based on wastewater management norms in the region, location, climate, city size and type of treatment used. The greater size of the sample in T – R systems is justified as this type of system is what the study aimed to examine and promote. On the other hand, NT – NR are included in the sample because this is the primary form of wastewater management in the Region today, and it was considered important to review some of the problems associated with this approach as well as the reasons for its prevalence.

Inventory data was collected information on each of the four typologies focussing on potable water supply; sewer coverage; and domestic wastewater treatment, disposal and agricultural use in Latin American cities with over 2000 inhabitants. The information gathered also showed the presence of a fifth typology, which involves the use of surface and/or underground water contaminated by household/ industrial draining for agricultural purposes. However, this typology was not considered due to the lack of information about contamination levels of the sources.

General studies of wastewater treatment and reuse

The first phase of the activities programmed for this project was the general studies of wastewater treatment and reuse. Activities were carried out in six steps:

- (a) Selection of 20 general study cases by the Project Technical Committee (7 members) that was also responsible for establishing selection criteria for studies in this phase and subsequent ones. The criteria established were developed around inventory information received and specific references to the most experienced countries in wastewater use;
- (b) Identification and engagement of national consultants responsible for executing the studies;
- (c) Execution of the 20 general studies selected during a two-month period;
- (d) Review and approval of 18 general studies by the Project Technical Committee;
- (e) Technical field visits to the selected cities by the head researcher, and
- (f) The implementation of the first regional workshop to discuss results from phase I and to prepare for phase II of the project.

Complementary studies

The objective of the complementary studies was to pursue work in greater depth on 10 of the 20 general case studies (detailed studies) following sample structures and criteria parallel to that of the previous stage. At this stage, each case study was to build on work initiated in the previous stage, evaluating the systems' impact on different populations, analysing further its strengths and weaknesses including its environmental, economic, socio-cultural, legal and institutional aspects, and assessing options for its improvement. The level of detail sought during this stage of the project was not attained due to limited access to key information. Consequently, the Technical

Committee decided to replace “detailed studies” originally proposed for this part of the project by “complementary studies”. Activities were carried out in five steps: (a) Selection of the 10 cases for the complementary studies; (b) Execution of complementary studies over a three-month period, which complemented the information collected during the initial stage providing more detail; (c) Technical visits to the project sites; (d) Study review, evaluation and approval by the project Technical Committee, and (e) The organization and implementation of the second regional workshop to discuss results of the current phase and the methodology for the following phase of the project.

Pre-feasibility studies

The last activity of the research project was to conduct four pre-feasibility studies for new or improved systems that would enhance the integrated systems for treatment and reuse of wastewater. These studies drew on lessons learned from the previous studies of the project enabling the application of various selection criteria by the Technical Committee. These lessons also affected the way in which different aspects of the studies were conducted, including strategies to manage technical, environmental, socio-economic, legal and institutional aspects. Activities in this stage of the project were carried out in seven steps: (a) Preparation of the material for the studies; (b) Selection of the four cases based on the criteria established in the 2nd regional workshop; (c) Inclusion of three additional pre-feasibility studies upon economic commitment from interested national institutions; (d) Execution of the seven pre-feasibility studies selected on a four-month period; (e) Technical visits to study sites; (f) Organization and execution of the 3rd regional workshop on wastewater, where the fourth section of it was dedicated to the presentation and discussion of pre-feasibility studies’ progress, and (g) the evaluation of the feasibility studies by the Technical Committee after the workshop.

Results

Accomplished:

- The following project outputs have been produced
 - Eight methodological guides for the execution of the inventory, general and complementary studies
 - Eighteen general studies edited and seventeen officially published
 - Two documents comprising the terms of reference and the methodological guide for feasibility studies
 - One document comprising executive summaries (English and Spanish) of the general studies
 - One document on the third regional workshop procedures
 - Terms of reference for the consolidated report elaborated and presented in the second annual technical report (August 2001 to June 2002);
- All the methodological tools and documents produced have been progressively incorporated in the wastewater homepage on CEPIS Web site to facilitate its use by project consultants and professionals interested in implementing this type of study. Over 24,000 visitors have visited the project web site since January 2001;

- An improved version of the software REUSE was prepared by CEPIS and is being currently used;
- Eleven of the 19 Latin American countries that were requested to prepare national inventories delivered their products (six of them are incomplete). The information compiled so far has been processed to evaluate regional trends and prepare a preliminary version of wastewater management typologies;
- Eighteen general studies completed and received by the Technical Committee for review and approval;
- Selection and execution of 10 complementary study cases (4T–R, 1NT–R, 3T–NR & 2NT–NR) in 9 countries. Two additional cases (Mezquital, Mexico & Villa El Salvador, Peru) were supported by the project using freed funds allocated to the Maracaibo case, whose funding was assumed by the state of Zulia (Venezuela). However, at the end of this activity the final versions of two complementary studies were not received (Juarez, Mexico & Jinotepe, Nicaragua). The Mezquital study could not be completed because of the serious limitations faced during the compilation of information from responsible national institutions in the water sector. Overall, 11 complementary studies were concluded resulting in the documentation of technical, environmental (health), social (legal & institutional) and economic (including financial) aspects of wastewater treatment and use;
- Selection and implementation of 7 feasibility studies (2T–R, 3T–NR, 1NT–R & 1NT–NR). Four feasibility study cases were selected during the second workshop. The selection process was followed by a general invitation from the Technical Committee to unselected cases under the condition that they receive official commitment for additional financial support from their national institutions. This resulted in the incorporation of 3 additional cases to the study. Along with the support from their national institutions, their inclusion was favored, as in the complementary studies, by the availability of uncommitted resources from the Venezuelan case. The Committee has received three completed studies, one has been sent back for revisions and the remaining two are under review;
- Twelve technical visits that involved visits to project sites, lectures, lobbying and awareness meetings with municipal authorities, communities, relevant national agencies and representatives of institutions and universities. The visits also included working meetings with national technical teams to discuss methodological issues and the elaboration of consistent proposals. The purpose of technical visits during the feasibility studies was to co-ordinate efforts with support from PAHO/WHO offices, and to evaluate progress of the local studies, while at the same time promoting them among municipalities and local institutions in the region. This process took place during lobbying and awareness meetings;
- Three regional workshops in wastewater use. The first two workshops revolved around the selection of general and complementary study cases, a methodologies presentation and a discussion of results. The third workshop allowed the identification of relevant components on the feasibility and sustainability of integrated systems for domestic wastewater treatment and use in LA;
- PAHO missions in participating countries have successfully disseminated the project. Dissemination strategies included: 3 conferences (Nicaragua, Costa Rica & Bolivia); 1

congress (Colombia); 1 regional course on agriculture (Ecuador) and, 4 workshops (2 on wastewater use, with one on reuse and the other on wastewater use and treatment) in 4 LA countries (Colombia, Venezuela, Brazil & Costa Rica);

- An article has been prepared by the project co-ordinators to be published in the 4th issue of the Urban Agriculture Journal. The article includes a summarized appraisal of domestic wastewater in the region, main project characteristics, preliminary findings and lessons learned;
- Since May 2002, co-ordination activities have been taking place in collaboration with AGUILA Executive Secretariat and IDRC – CFP for the Network’s third assembly and the Latin American Round – Table Discussion “Feasibility of Domestic Wastewater Use” held on September 23-25, 2002;
- Eight national seminars were held in the countries that prepared the Viability Studies: Bolivia, Brazil, Colombia, Costa Rica, Peru and Venezuela, and
- The following events were held on Sept. 23-25, 2002 in Lima, Peru:
 - Organization of the Latin American Donors Round-Table “Feasibility of Domestic Wastewater Use”.
 - Organization of the third AGUILA Assembly.

In progress

- Regional inventory results are being edited and will be incorporated into the Web page of the project. The edited version of the 11 complementary and 7 feasibility studies will also be added to the site;
- The elaboration of an executive summary of the Complementary Studies;
- The elaboration and editing of the consolidated report;
- The publication of the 7 feasibility studies;
- Presentation of the project in the XXVIII Inter American Congress of Sanitary Engineering (AIDIS), and
- Continued support to the joint co-operation between Costa Rica and Guatemala.

Impacts:

The project had impacts in the following areas:

Human resources development

- Twenty national consultants (15 male & 5 female) were identified and contracted in 14 countries to carry out the studies.
- The national technical teams used the “Formulation and Economic Evaluation for Project Profiles on Use of Treated Wastewater Crops Model”, developed by CEPIS and updated during these studies.
- Attendance to the Regional Workshops was as follows: 30 people (17 consultants, 6 professionals and technical committee members trained on the methodology to be used in the complementary studies) in the first workshop and second workshop. Fifteen participants (7 feasibility studies, 5 members of the technical committee, 1 facilitator and 2 observers) in the

third workshop. The workshops facilitated the exchange of experiences among participants, significantly improving their reporting techniques.

- The technical teams that participated in the feasibility studies are now able to elaborate and implement similar studies in their countries.
- The implementation of the “Wastewater Treatment and Use: Horizontal Co-operation Project” between Costa Rica and Guatemala is the first evidence of the impact the regional project is generating. This project also meets the project research team’s expectations in regards to the formation of qualified technical teams allowing the formulation and implementation of integrated systems within the countries.

Institutional capacity building

- Two lectures: one on wastewater use in agriculture was given to a group of representatives from national institutions responsible for water management in Nicaragua. Another lecture was delivered on wastewater treatment including a presentation of the Regional Project on Reuse at the University of San Simon in Bolivia.
- Two staff members from the Costa Rican national water institution have agreed to promote the development of the project in their country by providing support on the socio-economic aspects of the study.
- Two workshops on wastewater use attended by representatives from local institutions and government representatives (health, environment, public services, etc.). One of the activities was organized by PAHO/WHO representative (Colombia) and the other by a government institution (Empresa Regional Sistema Hidráulico de la Planicie de Maracaibo – PLANIMARA, Venezuela).
- A workshop on the software REUSE organized in the state of Ceara (Brazil) and addressed to the Prefecture, the University, Ministry of Health and the Banco del Nordeste. The workshop included the presentation and discussion of the Regional Project of Reuse and Feasibility Study of Fortaleza.
- A four-day workshop on wastewater treatment and use given to government institutions (health, environment, water supply) in Costa Rica. The workshop content included the presentation of the REUSE software to formulate integrated projects on wastewater treatment and reuse.
- The technical visits strengthened the support provided by PAHO/WHO representatives to participating countries. The various meetings held with local institutions during these visits were key for the evaluation of feasibility studies progress, the promotion of feasibility studies and dissemination of the REUSE Regional Project.

Effective local partnerships

- The project has had the support of 19 health and environment advisors from the PAHO/WHO Representative Offices.
- The national technical teams participating in the project were mainly composed of University Professors and Masters students.

- A professional from IPES (Instituto de Promoción de la Economía Social), member institution of AGUILA Network, was part of the Technical Committee during the complementary study stage. The Executive Secretary of AGUILA also actively participated in the second project workshop.
- Offers to support and promote the project have been received from the University Corporation of Ibagué and the Association of Farmers of Chipalo River in Colombia.
- In order to attain greater participation and commitment from the different actors involved in the case of La Maica (Cochabamba, Bolivia), the Inter-institutional Committee was created, whose main responsibility is the mainstreaming of the REUSE project. The members of this Committee include the Universidad Mayor de San Simón, SEMAPA, the Municipality, the Prefecture, the farmers' board, and health and agriculture representatives.
- The Municipality of Villa El Salvador and IPES – Peru, has committed to strengthen the agricultural and livestock area of the ZAVAES (Zona Agrícola Villa El Salvador) district. Through this action they expect to avoid declines in agricultural areas and ensure food security.
- The Prefecture Environment Secretariat from Fortaleza (Brazil) is aware of the importance of this study as a regional model and is committed to support it. In addition, the Universidad Federal do Ceará is elaborating an experimental project on reuse that will be implemented in collaboration with the Water and Sewerage Company of Ceará. Meanwhile, the University offered to support this project, and as such it will be collaborating in the realization of the national wastewater inventory under the co-ordination of PAHO – Brazil.
- PAHO is fostering technical co-operation among countries in the Region. One of the projects selected for this year “Wastewater Treatment and Use Integrated Management” is being jointly developed by Costa Rica and Guatemala. The project receives technical advice from CEPIS through the REUSE project and it is considered a knowledge transfer effort, where the technical team from Liberia (Costa Rica) supports the formulation of a similar project in Guatemala.

Gender Focus

- In anticipation of the third workshop, the Technical Committee evaluated the seven feasibility studies and recommended the incorporation of gender aspects in the final versions of the studies.

Contribution to multi-disciplinarity

- The Technical committee is comprised of experts in: wastewater use and treatment, environment, agriculture, social sciences and economics.
- The course-workshop held in Liberia (Costa Rica) confirmed the limited knowledge of local professionals in wastewater reuse, directly affecting the acceptance of this practice in the country. In spite of that fact, professionals expressed interest in developing a pilot program to amass technical, health and environmental information for the introduction and dissemination of this practice throughout the country.

- The execution of the feasibility studies allowed the establishment of multi-disciplinary technical teams for each location.
- Technical visits allowed the strengthening of national working teams, particularly in those case studies where the integrated systems were perceived as weak. They also facilitated interaction among actors involved and promoted their participation in the studies.

Scientific and methodological advances

- The inventory information collected will be incorporated into the Regional Inventory Matrix prepared during the first phase. Indicators will be analyzed once again to confirm trend changes defined in the previous phase of the project.
- The information collected in the complementary studies is considered essential for the consolidated report that will be prepared by the Technical Committee. Such information will enable this research to better sustain typologies of wastewater treatment and use in LA, and to prepare methodological guidelines for the preparation of future projects.
- The workshop modality used at the end of each stage of the project allowed a more accurate appreciation of the progress in each activity. It also facilitated the sharing of experiences and methodologies among study teams.
- The third workshop facilitated the identification of specific improvements that should be incorporated into each one of the seven feasibility studies in the context of the Regional Project.

Research results utilization

- The difficulty in completing and updating inventory information on wastewater management in LA has motivated the incorporation of some indicators related to this topic into the Inter-American Environmental Sanitation Information System (SISAM) implemented by PAHO.
- The PLANIMARA team has understood the importance of the Maracaibo (Venezuela) study in the context of LA and has included more socio-economic and environmental criteria in the proposal. These criteria include analysis of the population involved to start the process, the need for water and soil availability, and a minimum profitable parcel per farming family.
- Wastewater experiences from LA enabled CEPIS to define treatment and use integrated models, which are being promoted and improved in the case studies sponsored by this project. The updated model will serve as a reference to define strategies and guidelines.
- The events held on September 24-25, 2002 in Lima, Peru (Latin American Donors Round-Table “Feasibility of Domestic Wastewater Use”, National Seminar for Peru and the Third AGUILA Assembly) contributed to raising awareness and sensitizing the audience about the potentials of the integrated systems in the region.

Fund leverage

- PAHO/WHO Representative Office in Mexico and IPES – Peru contributed 2/3 of the total funds for the two additional complementary study cases in Mezquital and Villa El Salvador, respectively.

- Participants in the complementary and feasibility studies were invited to participate in the following phases, provided their national institutions commit to contribute at least 50% of funds required for the study.

Lessons Learned

1. Most LA countries do not have systematized information regarding domestic wastewater management. In many countries where the information is available, the local staff does not have the time or resources to properly share it.
2. In some cases, national institutions are not keen on providing wastewater management information due to political-economic reasons (low coverage, use of untreated waters, etc.). However, this situation is expected to improve with the inclusion of wastewater information on the CEPIS web site, which will aim at promoting greater institutional participation and interest groups.
3. The reports on treatment and/or reuse related examples contained more information; as a result, the proposal to integrate treatment and reuse had better defined criteria to implement the projects in countries where this typology was applied. The reports regarding NT-NR cases presented a weaker conceptual framework. In NT-R cases, it was reported that there was difficulty in obtaining information because institutions were not willing to officially admit the occurrence of these activities and their potential risk to human health.
4. The limited participation of national institutions and conflicts observed during the study reveal that the greatest limitation of integrated systems is not related to technical issues, but social (legal and institutional) ones. This observation led the Technical Committee to propose the mainstreaming of feasibility studies by the technical teams.
5. The methodological guide prepared for the implementation of general studies demanded too much detailed information. In fact, some consultants decided not to sign a contract because they considered the information requested too extensive. Instead, they were advised to use the guide only as a model to organize existing information.
6. Wastewater use in agriculture is the least documented activity in the inventories, which suggests that it is still an incipient activity. Wastewater for agriculture is used for 3 main crops types⁵⁹: vegetables (45%), industrial crops⁶⁰ (29%), and forage (21%) in the region. A preliminary assessment of the information compiled shows that the agricultural area irrigated with wastewater would be less than 500,00Ha in the whole region. It was further discovered that wastewater activities are employed in places where it was previously believed to be non-existent.
7. Preliminary inventory data shows that investments in water supply infrastructures have concentrated in large cities as a result of a high urban growth rate. Furthermore, sewer systems receive more attention than wastewater treatments. Between 1995 and 1998, the

⁵⁹ Crops species differ for each study. Detailed information can be found in the project documents “Resumen Ejecutivo de los Estudios Generales” and “Advances of the inventory on the current situation of domestic wastewater in Latin America”.

⁶⁰ Crop species used in large-scale industry such as wine production, cotton, cereals etc. For detailed information on the species used, please refer to the same document above.

management and installation of sewer systems increased from 38 to 63%, while domestic wastewater treatment coverage collected by sewer systems declined from 19 to 14%. Wastewater management figures indicate that this activity is becoming less of a priority (between 1995 to 1998 treatment coverage has been reduced by 26.3%) among Latin American governments. This trend is likely due to the existing economic crisis in the region.

8. The support provided by the PAHO/WHO representatives from the countries involved in the project has been of key importance in the co-ordination between technical teams and national institutions. However, it is felt that this effort has not been sufficient in the promotion of the project, and as such the principal researcher will continue to work with national institutions under the umbrella of PAHO.
9. Although terms of reference were carefully defined, actual execution of the studies by various technical teams from the different countries has affected the homogenization of project results. As a result, extra effort was demanded from the research team in terms of project management and administration that was not foreseen at the beginning.
10. The Web is a valuable dissemination tool for the project. The interest shown by an increasing number of visitors has strengthened the project.

Publication List and Brief Review

Project reports

- Moscoso, Julio. 2001. Informe Técnico Anual: Agosto de 200 a Julio de 2001. . PAHO – CEPIS, Lima, Perú.
- Moscoso, Julio. 2001. Annual Technical Report: August 200 to July 2001. PAHO – CEPIS, Lima, Peru.
- Moscoso, Julio. 2002. Second Annual Technical Report: August 2001 to June 2002. PAHO/WHO – CEPIS, Lima, Perú, July 2002.
- PAHO – CEPIS. 2000. Sistemas Integrados de Tratamiento y Uso de Aguas Residuales en América Latina: Realidad y Potencial. Convenio: IDRC – OPS/HEP/CEPIS, 2000 – 2002. Lima, Perú.

PAHO – CEPIS. Inventario sobre la Situación Actual de las Aguas Residuales Domésticas en América Latina. Lima, Perú (undated).

This document describes the objectives, methodology and activities to be carried out during the first phase of the project

PAHO – CEPIS. Avances del Inventario sobre la Situación Actual de las Aguas Residuales Domésticas en América Latina. Lima, Perú, (undated).

PAHO – CEPIS. 2001. Reporte de Avance (al 30 – 10 – 2001).

PAHO – CEPIS. 2001. Resúmenes de los Estudios Generales (Información Provisional), Lima, 9 de octubre de 2001.

PAHO – CEPIS. 2001. Resúmenes de los Estudios Generales, Lima, Peru, April 2002
This document includes summaries of General Study in Antofagasta (Chile), Campo Espejo – Mendoza (Argentina), Cochabamba (Bolivia), Concepción de la Vega (Dominican Republic), Fortaleza (Brazil), Ibagué (Colombia), Jinotepe (Nicaragua), Luque (Paraguay), Maracaibo (Venezuela), Portoviejo (Ecuador), Puntarenas (Costa Rica), Santiago (Chile), Sololá (Guatemala), San Agustín & Tacna (Peru), and Juárez & Texcoco (Mexico).

PAHO – CEPIS. 2001. Resumen Ejecutivo de los Estudios Generales, Lima, Perú, April 2002
This document points out the similarities and differences among the 18 case studies. The document addresses water and sanitation, wastewater use in agriculture; and selected economic, environmental, social legal and institutional aspects related to wastewater management. It also includes selected components that might improve the systems studied in preliminary proposals.

PAHO – CEPIS. 2002. Sistema Integrado de Tratamiento y Uso de Aguas Residuales Domésticas de Sullana, Perú: Modelo Referencial, Lima, Perú.

PAHO – CEPIS. 2002. Guía de Referencia para la Elaboración de los Estudios Generales. Lima, Perú.

PAHO – CEPIS. 2002. Guía Referencial para la Elaboración de los Estudios Complementarios, Lima Perú, July 2002

PAHO – CEPIS. 2002. Guía de Referencia para la Elaboración de los Estudios de Viabilidad. Lima, Perú

PAHO – CEPIS. Términos de Referencia: Estudios Generales, Estudios Complementarios, Estudios de Viabilidad, Lima Perú (undated).

PAHO – CEPIS. 2002. Términos de Referencia para la Elaboración de los Estudios de Viabilidad, Lima Perú.

PAHO – CEPIS. 2002. Términos de Referencia para la Elaboración del Informe Consolidado, Lima Perú, July 2002

The “Informe Consolidado” will be a state of the art report about the productive use of treated wastewater, analysis of results on the actual state, and projected activities in the Region. It is also intended to become a key reference for decision-makers. The report will include a guide for the formulation of integrated wastewater treatment and reuse systems.

PAHO – CEPIS. 2002. Tercer Taller Regional de Uso de Aguas Residuales: Viabilidad del Uso del Agua Residual Tratada, CEPIS, Lima, Perú, 7 al 9 de mayo de 2002, Lima, Perú.

General studies

- Abarca Garbanzo, Jorge Arturo. 2001. Estudio General del Caso Puntarenas, Costa Rica. PAHO – CEPIS, Costa Rica, junio de 2001 (2 copies).
- Acosta, Luis et.al. 2001. Estudio General del Caso Villa El Salvador, Lima, Perú. PAHO – CEPIS, Lima, junio 2001.
- Barbeito Anzorena, Eduardo. 2001. Estudio General del Caso Campo Espejo del Aglomerado Gran Mendoza, República de Argentina. PAHO – CEPIS, República de Argentina, junio de 2001.
- Castro Merizalde, Boroshilov. 2001. Estudio General del Caso Portoviejo, Ecuador. PAHO – CEPIS, junio de 2001.
- Coronado Rocha, Olver et.al. 2001. Estudio General del Caso Ciudad de Cochabamba, Bolivia. PAHO – CEPIS, Bolivia, junio de 2001.
- Coronel B., Darío. 2001. Estudio General del Caso San Lorenzo y Luque – Cuenca del Lago Ypacaraí, Paraguay. PAHO – CEPIS, junio de 2001.
- Del Carpio, Olga. 2001. Estudio General del Caso Tacna, Perú. PAHO - CEPIS, Perú, junio de 2001.
- Gámez G., Sergio. 2001. Estudio General de Caso Ciudad de Jinotepe, Carazo, Nicaragua. PAHO – CEPIS, Nicaragua, junio de 2001.
- Garza Almanza, Victoriano. 2001. Estudio General de Caso Valle de Juárez, Mexico: Distrito de Riego 009, Ciudad Juárez, Chihuahua. PAHO - CEPIS, Mexico, junio de 2001 (2 copies).
- Lam, Elizabeth et.al. 2001. Estudio General del Caso Antofagasta, Chile. PAHO – CEPIS, junio de 2001.
- Matos, Leonardo Mercedes. 2001. Estudio General del Caso Ciudad de Concepción de la Vega, República Dominicana. PAHO – CEPIS, junio de 2001.
- Manrique Arce, Roberto et.al. 2001. Estudio General del Caso San Agustín, Perú. PAHO – CEPIS, junio de 2001.
- Mena Patri, María Pía. 2001. Estudio General del Caso Santiago, Chile. PAHO – CEPIS, Chile, junio de 2001.
- Muciño, Daniel. 2001. Estudio General del Caso Lago de Texcoco, México. PAHO – CEPIS, Mexico, junio de 2001.
- Rodrigues Pimentel, Francisco César. 2001. Estudo de Caso Conjunto Renascer Fortaleza, Estado do Ceará – Situação: CT – SR com tratamento e sem reúso. PAHO – CEPIS, Brasil, junio de 2001.
- Rosillo, Antonio. 2001. Estudio General del Caso Maracaibo, Venezuela. PAHO – CEPIS, Venezuela, junio de 2001.
- Sánchez de León, Ever Manolo. 2001. Estudio General del Caso Sololá, Guatemala. PAHO – CEPIS, Guatemala, junio de 2001.
- Vanega Gálvez, Mario. 2001. Estudio General sobre la Situación de las Aguas Residuales de la Ciudad de Ibagué, Colombia. Caso: Sin Tratamiento y sin Reúso. Caso Específico: Río Chipalo, Informe Básico. PAHO – CEPIS, mayo 2001.

Other documents

Moscoso Cavallini, Julio et al. 2002. Modelo para la Formulación y Evaluación Económica de Perfiles de Proyectos Integrados de Tratamiento y Uso de Aguas Residuales en Actividades Agropecuarias. CEPIS, Lima, Peru.

This document presents a model for the evaluation of wastewater treatment and reuse projects. According to the authors, the model is considered an effective tool designed for the codification, processing and presentation of information at the project profile level. The model is developed in Windows Visual Basic and can be used to formulate and financially assess wastewater use projects in agriculture, aquaculture and forestry. It incorporates market, technical and economic information through simple user-friendly steps. The program is versatile and can be used in any country utilizing its own economic, environmental and production variables, thus providing accurate results.

II.4. AGUILA Executive Secretariat and Evaluation (100503)

Project Summary

The Latin American Research Network on Urban Agriculture - AGUILA, is a network of researchers and advocates that was founded in April 1995 with the support of IDRC. The network was originally financed under research activity 00921 with a stipulated duration of 36 months (January 1997-December 2000). The Centre's contribution for this activity was 227,790CAD. The overall objective of the activity was to launch the Executive Secretariat and first program of network activities, enabling its members to evaluate projects, enhance regional databases, training and technology transfer activities within the region. Due to logistical and organizational constraints between the host organization and the Network's Executive Secretariat, the network's objectives were refined and a new host organization was selected by the Steering Committee during the Network's second assembly in Havana (1999). In 2000, a contribution of 60,100CAD was approved by IDRC for the "AGUILA Executive Secretariat and Evaluation (100503)" research activity. With an expected duration of 24 months (December 2000-2002), the general objective of this activity was to encourage UA in Latin America and the Caribbean by strengthening the Network and its membership through clearly established lines of work and a set of strategic objectives. In 2000, the Steering Committee selected the Institute for Promotion of Sustainable Development (IPES) – Lima, as the new host institution and guided the contracting of an Executive Secretary for a two-year term that began in January 2001. IPES' contribution as the recipient and host institution for AGUILA corresponds to the equivalent of 27,800USD. A summary of project results, objectives and impacts are presented in Appendix IX.

Background

The Latin American Research Network on Urban Agriculture – AGUILA was founded in April 1995 during the IDRC and FAO sponsored international seminar on "Urban Agriculture Development in Latin America" held in La Paz, Bolivia. Forty-six representatives attended the seminar including various institutions and representatives of international co-operation organisms from the Americas and Europe. AGUILA is part of a regional strategy initiated by several international organizations that came together in the 1990s to support a more coherent and effective inclusion of UA and urban food production into local developmental strategies.

From 1997 to 1999, the Network was hosted by ETC – Holland, through ETC – ANDES in La Paz (Bolivia) where the first Executive Secretariat was also established. During that period, the Secretariat was conformed by an Executive Secretary and three Regional Co-ordinators (Central and South America and the Andean Region). Since its inception, the AGUILA Network has held three general assemblies (1998 & 1999 in Havana, Cuba; 2002 in Lima, Peru), where decisions over the Network's co-ordination and management of activities were taken. In 1999, during the second assembly in Havana, a new structure for the management and functioning of the Network was defined. The new structure consists of a democratically elected Council (two-year term), which is responsible for selecting the Executive Secretariat host organization for an equal term.

The new structure has also provided for the establishment of Working Committees. The Steering Committee and a body of member institutions from three continents are responsible for assembling the network. The Steering Committee is comprised of a President and four Members from local research NGOs, international research institutions, regional and international academic institutions. The Network consists of 126 members representing a total of 98 institutions (52 NGOs, 20 universities, 10 government institutions, 11 individuals, 5 diverse institutions) from the Americas, Asia and Europe.

The Network's mission is to join and articulate the efforts of individuals, institutions, NGOs and other organizations that foster UA in Latin America and the Caribbean through research, communication, training, management, exchange and co-operation. Although the original objectives were reformulated in 1999, the Network's lines of work remain the same. The lines of work include information and communication; research through inter-institutional co-operation among members; training and education; institutional strengthening; policy; and, the elaboration of local, national and regional strategies that will integrate and facilitate the development of UA related activities and services like assessments, consulting, resource mobilization and publishing.

Objectives

- **General**

The objective of the project is to encourage UA in Latin America and the Caribbean by strengthening the AGUILA network and its memberships.

- **Specific**

The specific objectives are as follow:

- a. To exchange information about experiences in UA in Latin America and the Caribbean;
- b. To strengthen the Executive Secretariat, the Network and its memberships by capturing additional resources and institutionalizing its activities; and
- c. To influence local authorities and decision-makers to include the support and promotion of UA in local urban policies.

Methodology

AGUILA is pursuing its objectives through information and communication, research by inter-institutional co-operation among its members, training and education, institutional strengthening and policy building. Activities include the elaboration of local, national and regional strategies that will integrate and facilitate the development of activities related to UA. Other lines of work include services like assessments, consultancies, publications and fundraising.

Activities cohere with the Network's line of work, relying strongly on the Internet and dissemination tools as well as lobbying activities. The chart below illustrates the basic tools (activities) used to attain particular objectives.

Graph 8: Summary of objectives and tools used

Objectives (key words)	Tools (activities)
Exchange information about UA experiences in LAC	<ul style="list-style-type: none"> - Website & Lyriss list administration - Participatory analysis of information & communication needs of programs & institutions involved in UA - Establishment of links with other institutions & networks working in UA - Design & implementation of a UA web-based data bank - Elaboration of an E-bulletin - Electronic conferences
Strengthen the Executive Secretariat, the Network & its memberships	<ul style="list-style-type: none"> - Member meetings - Fostering of national networks - Activation of working groups (training, research, publishing, consultancy & statutes) within the Network - Project formulation & support involving Network members
Influence local authorities & decision-makers to include UA support & promotion in local urban policies.	<ul style="list-style-type: none"> - Strategic alliances with cities engaged in the promotion of UA - Official letters & E-messages (lobbying) addressed to local government authorities

Results

Exchange of information on UA experiences

- Based on a “Demand identification” agreement reached during the first AGUILA Assembly, an “Information Demand Studio” was developed. The objectives of the “Studio” were:
 - (a) To identify regional, national and international programs and institutions that have a strong influence on urban politics and planning;
 - (b) To identify the main information and communication needs for each of the different actors involved in UA development.
 - These two objectives involved the selection of 10 cities⁶¹ (7 of the local stakeholders are AGUILA members). The criteria used in the selection was based on ecosystem type and population (see table on page 65). The results showed that the most important information topics for these 10 cities were agriculture, environment and marketing. As for information strategies the following were identified: training opportunities, systematization and exchange of relevant experiences or approaches, and workshops on policy and planning;
 - (c) To identify potential ways to improve the relevance and effectiveness of information and communication activities of RUAF, PGU-ALC and of AGUILA (IPES).
 - In this objective, three possibilities were identified. Firstly, continuing the publication of RUAF’s Urban Agriculture magazine in Spanish by the Executive Secretariat. Further, the group contemplated the possibility of incorporating a local stakeholder for the summoning of articles and local distribution of the magazine. Secondly, the group discussed joint development by RUAF and AGUILA of regional exchange programs with producers and representatives from various institutions working in UA. Thirdly, the development of UA courses by AGUILA, IPES and PGU incorporating different approaches and perspectives (trainers, produces, government and support institutions)

⁶¹ Lima (Peru), Mexico D.F. (Mexico), Havana & Cienfuegos (Cuba), Belo Horizonte (Brazil), Quito (Ecuador), Teresina (Brasil), Cajamarca (Peru), Cuenca (Ecuador), Camilo Aldao (Argentina)

were discussed. Results achieved in this objective include the identification and incorporation of 15 local actors to the Network's membership.

- (d) To establish or strengthen links among stakeholder organizations and key actors in UA at the regional and national levels.
- Information was disseminated about the network and local stakeholders were identified.
 - According to the recorded number of visits, the Network web page averaged 7 visits per day in August 2002. Initially, IDRC hosted information about AGUILA on its web page. In 2001, the AGUILA web page was launched and is now hosted on the IPES web site.
 - The AGUILA bibliographic database contains fifty-one titles and 6 magazines on the subject of UA. A video library has also been created that includes 11 UA-related project videos from the LAC region⁶² and a two-part video on UA produced by ETC – RUAF LEUSDEN – AV2.
 - Eight electronic newsletters (AGUILA NOTICIAS) have been circulated between June 2001 and May 2002. The newsletters are available on the Network's web page, which includes a direct access link to its latest publication.
 - Ten articles were prepared for the UA Magazine No. 6 by the Editorial Committee. Thirty percent of the articles included in the final edition of the magazine for the LAC region have not been translated to Spanish.
 - AGUILA collaborated with RUAF and CGIAR in the organization of the electronic conference "Adequate Methods for UA Investigation, Policy Development, Planning, Implementation and Evaluation" that took place on February 4 to 16, 2002.
 - Appropriate methods for urban agriculture: research, policy development, planning, implementation and evaluation.

Institutional strengthening and human resources development

- 126 people representing a total of 98 institutions (52 NGOs, 20 universities, 10 government institutions, 11 individuals, 5 other institutions) currently form the AGUILA Network. Seventy-nine of the 98 institutions are from 18 Latin American and Caribbean countries⁶³ (members and membership applicants); 12 are from 6 European countries, 6 are from 2 institutions in Canada and the USA, and one is from Asia (associates).
- In 2001, as the administration of the AGUILA Lyris list was turned over to the Network's Executive Secretariat, a new Spanish version of Lyris web page was developed for its administration.
- Since 2001, AGUILA's web page has been on-line and is regularly updated. Among other relevant information, the page contains a photo gallery with samples from 9 countries (13 cities) totaling 133 pictures. The page includes a section on "Publications" that contains proceedings from AGUILA meetings and assemblies, electronic newsletters and UA related articles, and UA magazines in Spanish. The web page includes links to 46 UA-related sites, including two new subsections: "International Agencies" with links to 21 International Funding Institutions (IFIs), multilateral and UN organizations; and "Regional Organisms" with links to 17 regional organizations. In the "Innovation" section of the web page, a "Crop

⁶² Argentina (Camilo Aldao), Cuba (Havana), Brazil (Brasilia Rural), Ecuador (Cuenca, Distrito Metropolitano and El Panecillo in Quito), and Peru (Province of Pataz, Cusco, Northern coast, District of Ventanilla and Pachacutec settlement in Arequipa)

⁶³ Argentina, Bolivia, Brazil, Colombia, Costa Rica, Cuba, Chile, Ecuador, Haiti, Mexico, Paraguay, Peru, Dominican Republic, Trinidad and Tobago, Uruguay and Venezuela.

list” was created that contains a list of more than 70 crops including scientific and common names used throughout the region. This section also includes a subsection on “Funding Agencies” and contains information on approximately 90 collaborating and funding agencies with links to more than 50 sites and a directory of 200 universities and colleges. Altogether, the page contains a total of 173 links. In 2002, frames were eliminated from the page in order to make it more user-friendly.

- Links have been established with:
 - CEPIS – Peru through the REUSE Project, including follow up workshops and the organization of the 3rd regional assembly of the AGUILA Network.
 - RUAF, IPES and PGU – LAC through the project/study “Information and Communication Demand of Urban and Peri-urban Agriculture Actors in LAC”. The editing of the UA magazine in Spanish, the development of the “First Workshop on UA” in Lima (Peru), and continuous collaboration in magazines and electronic conferences were also the results from this activity.
 - IPES, CEPIS and the Municipality of Villa El Salvador by providing technical assistance in the complementary study about integrated systems of treatment and use of wastewater.
 - PGU – LAC, by collaborating in the execution of the “Regional Course on Action – Research and Management of UA in Latin American and Caribbean Cities” and the regional contest “Urban Agriculture Investigation, Activities and Management in Latin American and Caribbean Cities”, in which 12 projects participated. Both activities took place in Quito (Ecuador) from November 5 – 23, 2001.
 - IDRC, by disseminating the AGROPOLIS Program.
 - FAO representation in Lima (Peru), where AGUILA was invited to be part of the organizing committee for the workshop “Family Gardens and Farms to Fight Hunger and Reduce Poverty”.
 - Galilee College in Israel offered to consider any candidate recommended by the Network who submitted an application to any of their programs. Following the Network’s expression of interest to repeat the course given in Quito, the institution sent a proposal for consideration.
- The establishment of the AGUILA Network – Mexico during the “Urban Agriculture Seminar” in Mexico City from July 8-9, 2000, supported by the Universidad Autónoma Metropolitana – Unidad Xochimilco and AGUILA – Latin America. AGUILA – Mexico is aware of the need to identify other members in order to strengthen the development of the Network. A space has already been created for AGUILA – Mexico in the Regional Network web page to exchange information and publications.
- Since its establishment, AGUILA has held a total of four meetings. Two meetings were held in May and November 2001 and the third was held in April 2002. The fourth meeting was held during the 3rd assembly of the Network (September 2002). The Network’s Board of Directors and the Executive Secretary attended the meetings.
- The working committee’s activities were based on statutes that were elaborated by members of the Steering Committee. Results based on data cards and information from Network members show that the Network needs to establish working committees in the areas of training, research, editorial work and consulting. A working committee was established to draft by-laws for the Network. Such by-laws⁶⁴ were elaborated and circulated among

⁶⁴ For further information and/or suggestion on by-laws details please refer to the Network’s web <http://www.ipes.org/aguila/>

members of the Board of Directors and were supposed to be approved during the 3rd general assembly (September 2002).

- AGUILA elaborated a total of 10 project proposals that have been presented to URB – AL (5), in national fairs (1), SCOPE (1), and other institutions (3). The Network also collaborated with CEPIS in the presentation of the project “Cleaning the City and Feeding its Dwellers”. Out of the 10 projects elaborated, 4 are in the process of being submitted, 3 have been rejected (one of them is being redesigned and will be presented to other institutions), the status of 2 are unclear and 1 is in the process of being approved. A project was also elaborated for the continuous publication and distribution of the Spanish version of the Network’s magazine.
- Eleven countries were chosen to participate in the Regional Course on UA, while only 38 applicants from 9 countries were selected. Among other activities, the call for course applications was announced through AGUILA’s electronic newsletters. Two-thirds of the activities developed throughout the course were about “Information and Communication Demand of Urban and Peri-urban Agriculture Actors in LAC”.

Support and promotion of UA in local urban policies

- Collaboration has been established with
 - The Municipality of Ate, Lima (Peru) through active collaboration of AGUILA members in PROMURBAM (Municipal Urban Program for the Environment), a program that involves the insertion of UA in peri-urban and urban areas.
 - The Municipality of Villa El Salvador, by lobbying and providing technical support for the incorporation of UA into the municipality’s political agenda.
 - Contacts and members from European and other Latin American cities to develop joint URB-AL. URB-AL is a funding program for LAC cities offered by the EU. The idea is for a city from Europe to partner with a city in LAC to promote sustainable urban development projects in both regions. These contacts and members have been established through Internet searches.
 - Letters regarding AGUILA were sent to 31 local, regional, international and multilateral institutions. For dissemination purposes a leaflet was published, both in English and Spanish, describing and presenting the Network’s mission, work, organization, member countries and co-ordinates.

Impacts:

The project had impacts in the following areas:

Human resources development

- The participation of AGUILA in the organizing committee of the FAO workshop enabled the participation of Network members such as CEPREN (nutrition field) and IPDA.
- Seventy five percent of the moderators that took part in the PGU – LAC regional contest “UA Investigation, Activities and Management” are members of AGUILA. Through this activity AGUILA received support from a PGU – LAC expert in the handling of web pages

and electronic filing systems. At the moment, both entities are developing the exchange of databases including contacts within the UA field.

- Fourteen members of AGUILA participated in the Regional Course for Action – Research and UA Management in LAC Cities, allowing them to meet and exchange knowledge with various actors (local governments, researchers, promoters and producers).
- Network members have been trained in electronic list management and web page design and administration.
- Members have built their capacity in the elaboration of project proposals and some efforts have been made in fundraising.

Institutional capacity building

- The Lyrus list and web page in Spanish have become very useful and easier to manage. Since March 2002, the list has been monitored in order to avoid the circulation of messages unrelated to the Network's objectives.
- The Network's web page was updated and modified taking into consideration suggestions made by IDRC and UMP.
- The realization of the Regional Course in Quito (Ecuador) set in motion the organization of the National AGUILA Networks in Peru and Brazil, respectively. Various institutions from Argentina have been identified and incorporated into the Network, with the possibility of being future candidates in the constitution of its own national network.
- The recognition of the Network and IPES as the focal points for RUAF has enabled AGUILA's involvement in the project "Information and Communication Needs among UA Actors in LAC Cities". The participation of AGUILA in the identification and selection of 10 cities for this study resulted in the identification of 10 local partners and the incorporation of 15 new members to the Network. These activities made possible field visits to 10 cities with experience in UA in the region, as well as the identification of potential authors and topics that could be included in the magazine.
- The skills of the Editorial Committee have been strengthened through the screening and selection process of documents to be published. Authors are also putting extra effort into the quality of their proposals since the demand for proposal submissions is greater than the space allotted for publications.
- Dissemination of information through the web page and the magazine has provided the Network with the skills to bring together authors and experts with knowledge about UA topics in the region.
- IPES strengthened its work on UA at the national and regional level and is therefore ready to face new challenges and projects in this field. The IPES team was directly linked to UA activities through its collaboration in projects elaborated by experts from other fields.

Effective local partnerships

- The identification and incorporation of 15 local applicants to the Network's membership during the "Information Demand Studio" is expected to facilitate the exchange of information on UA.
- During the First Workshop on UA in Lima (Peru), AGUILA established contacts with more than 58 individuals from 19 institutions and 4 municipalities from Lima working in UA.
- The contacts established during the demand analysis were made possible by the work of some members in concrete tasks such as the identification of participants in the regional

course and their incorporation in the AGUILA Network (ex. Governador Valadares Municipality).

- The recognition of the Network's role in UA is reflected by the participation of its members in several FAO projects.

Contribution to multi-disciplinarity

- The statutes of the Working Committees were posted on the Network's web page in order to obtain members' opinions beforehand and prepare them for approval during the 3rd assembly. The areas of expertise of committee members include food and conservation, urban agriculture, urban management and agro-ecology.
- Through web searches several cities and institutions working in the field of UA in Latin America and Europe were identified and contacted for the development of joint URB-AL projects.
- In order to proceed with the formulation of projects, common areas of interest were defined by AGUILA through electronic communications. Project themes will be discussed during the next RUAF meeting, including analysis of follow-up and funding strategies.
- The collaboration of the Network in the organization of electronic conferences with other partners has stimulated the discussion of various subjects related to UA. Among these subjects were discussions around the utilization of urban organic waste for UA. The topic generated so much interest among members, that the organization of an electronic conference on the subject is being considered.
- The participation of IPES (in the viability study) and its Executive Director (as member of the advisory team) in the REUSE project influenced the use of participatory methodological tools, such as structured interviews with local actors. Relationship criteria were strengthened between UA and topics relevant to the urban environment (urban planning, poverty, commercialization and value adding, waste and water reuse).

Scientific and methodological advances

- The information and communication strategies (E-newsletters, web page, magazines and other publications) used by the Network have contributed to the dissemination of other research activities. However, the dissemination of scientific advances in the field needs to be improved, either in terms of methodologies developed or demonstrated scientific advances. So far, action taken has mainly been based on results interpreted from a social viewpoint.
- The existence of the sub-section "List of crops" in the "Innovations" section of the web page was created with the objective of establishing a common knowledge of the crops used throughout the LAC region. This space has been well received by all Network members.
- The reactivation of the Editorial Committee made possible the identification of dissemination and information needs in the region. According to the Committee, a lot of work needs to be done in regards to the editing and publication of articles in the UA magazine in order to bring to light the true potential of the Region.
- A methodology was established to evaluate articles submitted for publication. The methodology consists of an evaluation sheet with the evaluators' criteria and recommendations for authors.

Research results utilization

- The Network's new web page has a feature that allows the reception of suggestions and opinions from users, making it more useful to member's interests and expectations, as well as to other persons interested in the topic. Groups that are not necessarily engaged in research have been attracted to the Network including NGOs (53% of the participants in the Network), independent farmers, local governments and central government institutions.
- The editing of the UA magazine in Spanish will likely be a main point for the development and promotion of the Network. Likewise, the presence of a sub-section on "UA magazines in Spanish" in the "Publication" section of the web page has helped to resolve the magazine distribution and information availability problems.
- The demand-analysis demonstrated the need for a greater presence of LAC articles in the Magazine, and, in turn, strengthening the Editorial Council for the LAC region. Specific themes were also identified for inclusion in the magazine, such as the theme "Urban Agriculture Methods" in magazine N° 5.
- Working committees should stimulate the incorporation of regional articles in the RUAF magazine.

Fund leverage

- Fund leverage activities included the elaboration and presentation of projects at fairs and to regional and international institutions working in the field of UA. As a financial sustainability strategy, the traditional "Assembly" has been modified to a "Regional Collaborative Project Presentation Meeting". This strategy aims to create funding alternatives for regional action on the topic of UA in the AGUILA context.
- The publication of the Spanish edition of the UA magazine is made possible with contributions from RUAF, PGU and IPES.
- As the host institution, the monetary value of IPES' contribution (includes equipment and utilities) is approximately 7760.00USD per year.

Lessons Learned

1. Changes made to the web page and its periodic updating have made it increasingly possible to satisfy UA information needs, not only in Latin America and the Caribbean but in other regions as well. This is clearly demonstrated by the number of visits (2335) recorded by the Network's page up to August 2002.
2. The strengthening of AGUILA has been jeopardized by the lack of a coordination and communication strategy in the effort to mobilize resources, to effectively liaise with research partner institutions and to manage the Network's activities. According to the recipient, this situation can be attributed to the Network's adoption of a number of research activities in the region that were either already or nearly completed.
3. In order to ensure information sustainability in the region, an effort should be made to either: publish and disseminate project information or to implement a systematization document. A document of this nature can be used to share experiences and development processes that could be lost with time, and will facilitate information access to members.
4. In spite of the various dissemination tools, the Network has had difficulties attracting target groups. Alternative strategies were employed. Specific actors, either working in the field or in related areas, were identified and invited to participate. The Network targeted university

researchers and research institutions, which represent 21% of the Network's membership. However, a greater percentage of the Network's members (53%) are development NGOs. These figures reflect the link between AGUILA's activities and research topics and the work done by NGOs, as well as a lack of concrete activities with regional target groups.

Project Documents/Publications

Project reports

González Novo, Mario and Gunter Merzthal. 2001. Technical Progress Report: February 2001 – August 2001.

González Novo, Mario and Gunter Merzthal. 2001. Technical Progress Report: September 2001 – February 2002.

In both reports and project activities, the results and outputs are presented by project objectives. Information at times was repetitive, making it difficult to grasp the main ideas and results. In general, the type of format used in the reports did not facilitate the assessment of project impacts as required by the PI in the evaluation of project impacts. The annexes in the first technical report include copies 1 and 2 of AGUILA Noticias electronic bulletin and the proceeding of the Steering Committee Meeting held in Havana, Cuba on May 8, 2001. The annexes in the second technical report include:

- copies 3 to 6 of AGUILA Noticias electronic bulletin;
- proceedings of the Steering Committee Meeting held in Quito, Ecuador on November 21, 2001;
- a copy of the joint project proposal with Galilee College from Israel;
- a list of institutions and municipalities that are members of AGUILA; and
- copies (English and Spanish) of the IDRC – IPES brochure "Lines of work of AGUILA".

Project videos available in AGUILA's video library

- Agricultura Urbana – Camilo Aldao, Argentina.
- Programa de Agricultura Urbana, Cuenca, Ecuador: about the process of UA in the city and the support provided by the municipality in its development.
- La Agricultura Urbana en las Ciudades del Siglo XXI, La Habana, Cuba: about the process of UA and its institutionalization process in Havana.
- Diagnóstico de la Agricultura Urbana, Distrito Metropolitano de Quito, Ecuador.
- Agricultura Urbana en el Panecillo Quarter, as a contribution to UA practices and Food Security in the city of Quito.
- Brasilia Rural, PROVE, Brazil.
- Urban Agriculture – ETC-RUAF LEUSDEN – AV2 Amsterdam 2001. Two-part video.
- Organic Agriculture: Source of Development – APGEP-SENREM Program. Agricultural development faces serious problems in the province of Pataz. Fruits and vegetable deficiency in family diet have resulted in high levels of malnutrition. To respond to this situation, organic agricultural methods are being implemented.
- Profitable Agro-ecology in Cusco – APGEP-SENREM Program. For years agricultural activities in Peru have involved the use of chemicals, slash and burn activities, over-grazing and hillside agriculture all contributing to the impoverishment of soils. Organic or ecological agricultural methods are the best for soil recovery.

- Recovery and Sustained Production of Forests and Prairies – APEGEP-SENREM Program. Documents the situation of the Carob forest on the northern coast of Peru and the need to come up with an integrated management plan to halt deforestation and poverty in the area.
- A Drop of Creativity in the Desert – APEGEP-SENREM Program. The socio-economic impact of this particular ecosystem in the livelihood of human settlements. An innovative project was proposed for the reversion of desert areas into water or green areas.
- Urban Agriculture – APEGEP-SENREM Program. Poverty is rampant in the peri-urban (semi-rural) settlement of Pachacutec in the city of Arequipa (Peru). Added to this are the poor conditions of the soils, which instigated the development of an innovative project that involved the introduction of an organic hydroponics system.

II.5. Participatory Impact Evaluation Methodologies for Urban Agriculture in Latin America and Caribbean (04486)

Project Summary

This research activity differs from others in that the main activity was to design and apply a methodology for measuring and evaluating urban agriculture interventions in selected countries of Latin America and The Caribbean (LAC). The recipient and implementing agency Recursos para el Desarrollo (REDE), a non-governmental development organization based in Lima, Peru led the activity. The expected duration of the project was eighteen months (June 1999 to December 2001), however due to unexpected technical delays an eleven-month extension was requested and granted. The total cost of the project was approximately 300,000CAD. Of this total, 95,730CAD was granted by IDRC; an estimated amount of 65,000CAD (40,900USD) by the recipient institution; and 40,770CAD from three local research institutions. The project focused on interventions in urban food production led by public and private organizations and institutions. The main output of this project was a participatory methodology to evaluate the impact of UA interventions that will be consolidated into a manual intended for NGOs and other groups interested in assessing their own interventions in UA. A summary of project results, objectives and impacts are presented in Appendix X.

Background

In LAC, where the majority of the poor live in urban areas, food is the most critical of all basic needs and a primary living expenditure. In response to this crisis, a variety of food and non-food production systems have developed for self-consumption purposes and trade. These efforts are increasingly being supported by both governmental and non-governmental organizations. Despite a growing stock of experience in the region, these have not been comprehensively documented and evaluated. Evaluation of UA experiences would be useful for the formulation of future interventions of greater relevance, effectiveness and increased support.

This research activity originates from consultations for the identification of new research priorities led by the Executive Secretariat of the AGUILA Network (hosted at the time by ETC – Andes). Led by REDE – Peru, the project intended to enable a group of organizations (governmental & non-governmental) in six Latin American and Caribbean countries (Costa Rica, Peru, Argentina, Chile, Cuba and Brazil) to design, test, illustrate and implement a methodology for participatory evaluation of UA interventions in their respective countries. However, due to budgetary constraints, the number of participating countries in the study was reduced to three (Peru, Chile and Argentina). The capital cities (Lima, Buenos Aires and Santiago) of the three participating countries were selected, all representing different levels of socio-economic development. All three cities however, were being affected by conditions which are likely to have impacted on the dynamics of UA: drastic structural adjustment programs, intense rural-urban migrations, a widening income gap and increased poverty, high unemployment and underemployment and different agro-climatic characteristics.

In order to develop the methodology, REDE assembled a multi-disciplinary team of 10 professionals with backgrounds in nutrition, economics, social sciences and agriculture fields, as well as experts in participatory methodologies. For the design and development of the methodology, besides general and specific objectives, the research team proposed a set of general and specific hypotheses to guide the research and explain the success or failure of the cases under study. The general research hypothesis sought to determine “how UA interventions in LAC have evolved not only to address food needs, but also have become an instrument to satisfy other family needs also impacting their cultural and economic behaviour”.

Meanwhile, specific hypotheses were elaborated to determine the achievements of UA interventions and at the same time identify the economic, nutritional, environmental and gender issues that have facilitated them. For the development of the methodology, a local organization in each city was commissioned to carry out city surveys and prepare relevant bibliographic information. Mapping activities were carried out to balance the lack of existing aggregated statistical information in the selected countries. Mapping in this context refers to the identification and characterization of diverse UA interventions; allowing the collection of information about the type of UA activities practiced, estimated number of families in each one of the experiences identified and possible areas of impact. These activities were followed by a series of interviews with public/private institutions and organizations engaged in UA in the three selected cities. At this point, the research team also elaborated a set of methodological tools and guides focusing on the four research factors previously established.

For budgetary reasons, the resulting evaluation methodology was implemented in Lima only. The main goal at this point was to test the designed methodology, putting into practice the tools and guides elaborated by the team. The methodological tools used included interviews with key informants, participatory evaluation workshops and a socio-economic survey. The information collected is still in the process of being analyzed. Once this process is completed, it is hypothesized that the results will argue the benefits and importance of applying this methodology in the assessment and evaluation of UA interventions, not only in the countries selected but also in other countries of the region.

Objectives

- **General**

The general objective of this project is to design and apply a methodology to measure and evaluate UA interventions in countries representative of different social and production systems in LAC. Interventions will be measured in terms of their impacts in social, economic, nutritional and environmental areas, particularly in connection with the livelihoods of poor urban population sectors.

- Specific

The specific objectives are as follow:

- a. To survey the extent and significance of agricultural activities in urban areas. Also to measure and evaluate the impact of UA on: local income, employment and community development, food security and nutrition, and on the urban environment in selected interventions in six LA countries;
- b. To increase awareness among local and national policy makers, town planners, research institutes and NGOs of UA as a component of urban development and resource management strategies;
- c. To strengthen interaction between members of the AGUILA Network and other stakeholders in UA with participating countries by encouraging joint initiatives, documenting research results and stimulating information exchange;
- d. To expand and enrich the database of the AGUILA Network through the production and dissemination of technical documents. Such documents will analyze, review and compare information on successful and less successful UA interventions in LAC; and
- e. To produce and test a methodological protocol for the systematic measurement and participatory evaluation of impacts of UA interventions in the region. Further, to expand corresponding expertise available in participating countries.

Methodology

The concept of UA in this research activity refers to the production of agricultural produce for self-consumption and small-scale commercialization, and includes activities such as horticulture and small livestock production. These activities are mainly practiced by the urban poor at various spatial levels, such as idle spaces beside their houses, communal or public lands and/or a combination of these for the development of small economic activities. Based on the objectives, this research activity called for a combination of qualitative and quantitative methods, using participatory and non-participatory tools. The selection of the cities was based on representative social and political contexts, particularly with respect to the impact of these interventions on urban poverty alleviation. Researchers from local governmental and non-governmental organizations in the three cities selected carried out the work. The table below summarizes the purpose of the main activities, the steps taken and the tools used for each step.

Graph 9: Summary of project activities

Purpose	Activities	Tools used
Study of selected UA interventions in LA countries	<ul style="list-style-type: none"> -Selection of participating countries; -Establishment of contacts and dissemination of projects -Elaboration of methodological tools (mapping, interviews with key informants, survey and participatory workshops) -Elaboration of UA directories -Collection of information using UA organizations & institutions directories -Mapping of selected cities -Bibliographic reviews 	<ul style="list-style-type: none"> -Meetings & electronic discussions between the research team and IDRC -Visits to selected countries -Meetings with local organizations and institutions involved in UA -Mapping and case study selection -Identification of consultants -Field visits -Surveys -Revision of relevant UA documents
Increased awareness on UA as a component of urban development and as a resource management strategy	-Elaboration and dissemination of project documents	<ul style="list-style-type: none"> -Co-ordination meetings -Participation in national forums
Documentation of research results and exchange of information	-Elaboration, dissemination and discussion of documents through the AGUILA Network	N/A
Production and dissemination of methodological documents on UA interventions		
Production and testing of methodological protocol for participatory evaluation of UA intervention impacts in LA	<ul style="list-style-type: none"> -Project implementation -Structuring of research team -Bidding and purchase of office equipment -Identification of local counterparts -Revision of objective and bibliography -Elaboration of project methodologies 	<ul style="list-style-type: none"> -Brainstorming activities -Workshops
	Research design <ul style="list-style-type: none"> -Definition of general and specific hypotheses -Elaboration of a methodological guide 	<ul style="list-style-type: none"> -Interviews with key informants and collection of secondary information -Surveys and structured interviews with a representative sample of urban farmers -Participatory workshops and structured interviews with UA leaders, educators and farmers
	Mapping and diagnosis of UA interventions <ul style="list-style-type: none"> -Systematization of information in a database -Contracting of local inst./org. to identify local actors -Elaboration of directories -Elaboration of selection criteria -Case study selection (workshops) 	<ul style="list-style-type: none"> -Interviews with key informants -Field visits -Workshops

Results

The project resulted in the following:

Study of selected UA interventions in LA countries

- Three countries selected for the study.
- Trips that included field visits (3) to Chile and Argentina. While in the countries, several international, regional and local institutions were visited. During these visits the REDE team

collected relevant demographic information and the identified local consultants to conduct the study in their country. In Peru, home to REDE, business meetings and field visits were made to municipal governments, as well as academic, international, regional and local institutions.

- Working meetings were held with the UMP – LAC Program in Ecuador, the Municipality of Cuenca (Ecuador), the AGUILA Network during its 1999 assembly held in Cuba, and the Universidad Agraria de la Molina (Peru).
- Relevant UA bibliography (methodologies, systematization, articles and publications) reviewed and selected.
- Three diagnostic studies that include mapping of UA interventions in Lima (Peru), Santiago (Chile) and Buenos Aires (Argentina) elaborated.
- Three directories of organizations and institutions working on UA in the 3 selected cities (Lima – Peru, Santiago – Chile and Buenos Aires – Argentina) elaborated.

Increased awareness

- Dissemination of the Project through REDE's participation in the "National Forum on Food Security" held in Lima in March 2000. Project results were presented to more than 30 local public and private organizations.
- Co-ordination meetings with the Central American Network REDCAHOR and EARTH University (Costa Rica), the Zamorano Pan-American School (Honduras), CIP/CIGAR offices in Peru and World Bank offices in Peru and Argentina.
- A working agreement was reached between REDE and the municipal government of Villa Maria del Triunfo District to join efforts with women's organizations working in UA activities.

Documentation of research results, exchange of information and production and dissemination of methodological documents (objectives c & d requiring AGUILA's involvement)⁶⁵

- Working document "UA Conceptual Framework" elaborated and disseminated through the AGUILA Network to stimulate dialogue and exchange of information.
- Document "Operational Plan for this Project" elaborated and shared with AGUILA Network members for feedback.

Production and testing of methodological protocol for participatory evaluation

- An office to carry out research activities established and fully equipped.
- A multi-disciplinary research team of 10 people assembled and contracted.
- Diagnostic and mapping of UA activities in the urban core of Lima (Peru) by a local institution (AIDER). This one-month activity involved: the identification of local professionals to gather information; location and identification of 33 public and private institutions working in UA; location and identification of UA activities spontaneously

⁶⁵ The results expected in these two objectives were not met due to the lack of contact between AGUILA and the project team.

practiced by urban dwellers; interviews with project leaders, urban farmers and institutions involved; field visits; systematization of information on a database; and elaboration of directories. Two hundred families were surveyed, detailed survey information can be found in project documents, including a paper presented by the Project Director during the 3rd assembly of AGUILA held in Lima (Peru) in September 2002.

- A two-day workshop for the selection of 3 case studies (a school, an NGO & an agricultural zone in one of the districts) in Lima was implemented. This activity resulted in the elaboration of workshop proceedings and criteria for the selection of case studies. Three cases were selected from a pre-selected group of 13 cases, based on 26 interviews held with various actors (schools, municipalities, NGOs and programs funded by the public sector) working in UA activities.
- First publication about research results on the Lima case elaborated. The document will include an introduction on UA in the city, analysis of successful experiences, a selection of case studies and a directory of institutions working in UA.
- Elaboration of a methodological package for the implementation, diagnosis and mapping of UA that includes 3 methodological tool guides (interview with key informants, participatory evaluation workshop guide and socio-economic surveys).
- An Evaluation methodology that includes a methodological guide for UA interventions developed and implemented. The methodology focuses on poverty, gender, technology, and geographic location aspects. It also includes tools and guides such as key informant interviews, participatory survey and workshops. Surveys were completed in the three cities selected. Thirty-four groups intervening in UA were identified in Lima, 60 in Buenos Aires and 21 in Santiago for a total of 115. In Lima and Buenos Aires, 70% of the group identified has been interviewed. The survey was also applied to 200 families of UA farmers in Lima; this information however is still in the process of being analyzed.
- Four participatory workshops executed on the topics of food security and nutrition, economy, environment and agriculture and social aspects.

Impacts:

The project had impacts in the following areas:

Human resources development

- Fifteen people participated in the case study selection workshop for the Lima case. The workshop was held in Peru with participants from REDE, members of AGUILA Network, consultants and collaborating experts.
- Because of this project, members of the research team were invited to participate in international (Kenya & Holland), regional (Costa Rica) and local events (Peru) as well as in the working table on Food Security and UA (Costa Rica) and the Food Security Institute Agreement with La Molina University and Agroaction – Germany.

- Several students⁶⁶ from the Nutrition Institute of La Molina University were trained on the application of the methodological tools used in participatory evaluations.

Institutional capacity building

- The formulation of the project strengthened and updated REDE's knowledge of UA, including methodologies and research mechanisms. This knowledge has been shared with other institutions in the region working on UA. The team is now able to pro-actively participate in the elaboration and presentation of project proposals on UA.
- The organization was able to enhance its institutional capacity by improving its premises and further strengthening and developing project management and administration, and negotiation skills. As a result, the Finance and Administrative Department of REDE has been reorganized and has improved its financial administration.

Effective local partnerships

- Three working agreements were reached between REDE and participating organizations from Peru and the LA region. One agreement was reached with the municipal government of Villa Maria del Triunfo District (Lima), which has resulted in more effective co-ordination of activities with municipal officials. Moreover, the recognition of the importance of UA activities has increased, resulting in its inclusion in scheduled municipal activities (mainly training). The other working agreements were with Pro – Huerta (Argentina) and CEPREN-AIDER (Peru).
- The work in Lima facilitated REDE's contact with local groups and organizations working in UA, allowing REDE to better understand their experiences. These experiences provided the team with elements to evaluate research development among targeted groups.
- Nearly thirty private, public and academic institutions from the participating countries collaborated by providing information and generously participating in the research.
- *Negative:* Although the project was partly elaborated and proposed by the AGUILA Network, its involvement and relationship with REDE did not last throughout the duration of the project, as was originally expected. The assessment of project results and impacts demonstrated that a lack of effective communication and sharing of information were the major factors hindering collaboration between the two institutions.

Gender Focus

- The working agreement reached between REDE and the municipal government of Villa Maria del Triunfo District resulted in greater support to women's organizations working in horticultural and hydroponics' activities.
- The gender dimension was incorporated into the research team meetings in order to develop a gender sensitive methodology. For the research team, introducing a gender perspective among UA functionaries and field workers was a difficult task and it has not been fully accepted yet. The team argued that a majority of government functionaries and development

⁶⁶ Number of individuals was not provided

workers perceive a “gender focused project” as either one where direct beneficiaries are women or where the greater numbers of participants are women.

- Five out of the ten members in the research team were females.

Contribution to multi-disciplinarity

- The project brought together a team composed of an economist, a nutritionist, an expert in participatory methodologies, an anthropologist, a statistician and a demographer. The team was also made up of a project leader, a principal researcher, 2 regional consultants (sociologist & anthropologist) and 2 international consultants (biologist & sociologist).
- Sharing of information with team members from different disciplines has enriched REDE’s knowledge of the economic, nutritional and gender aspects of UA.

Scientific and methodological advances

- The presentation of project results during the March 2000, National Forum on Food Security resulted in the inclusion of UA as a Food Security strategy among the urban poor in the Forum Agreements.
- Survey results showed the need for aggregated statistical data on UA. This resulted in the application of a mapping exercise for the diagnosis of existing UA interventions by private/public institutions and organizations. In Peru for instance, agricultural data is not categorized by location (urban or rural), instead data are recorded based on the type of administrative unit, depending on the production system.

Research results utilization

- The availability of this kind of methodology will be useful to AGUILA members and institutions working in UA. The methodology can be implemented and adapted to the context of other countries in the region. In the case of Lima, the methodology is already being used by REDE in the implementation of a collaborative project with a German organization and La Molina University (Peru). Random sampling is being done through surveys south of Lima to assess food security and agriculture in urban and peri-urban contexts. At last, results obtained through the application of this methodology can be useful in the formulation of policies and future UA interventions with an economic focus.
- This project has been a valuable contribution to the further development and understanding of UA in the participating countries. Research results and objectives of this project have been shared with colleagues in various academic and working meetings, conferences and international courses.

Fund leverage

- REDE’s work with IDRC has gained them recognition among national and international aid organizations, resulting in the funding of another project by two European organizations (Germany & Spain).
- Various institutions provided in kind contributions that included promotion of the project, sponsorships, assistance with key contacts and facilitation of information.

- *Negative*: the recipient institution suggested that the lack of adequate funding and demonstrated interest on the project by other institutions was a major hurdle in its success.

Lessons Learned

1. The concept of “impact” was set aside since the experiences presented did not offer substantial information for a “before” and “after” evaluation that could be applied on an impact study. Given the complexity of the research topic a great deal of time was dedicated to the exchange of ideas to develop a “Participatory Impact Methodology”, which according to REDE, is to some extent an intricate field for economists and academics.
2. REDE’s perception is that the project did not receive adequate funding, thus limiting activities and accomplishment of objectives. REDE was responsible for seeking funds to finalize project activities. However this has proven to be a painstaking task since a great number of potential partners are neither interested in funding the development of methodological models nor contributing to investigations in mid course.
3. The understanding of gender sensitive research has not been fully digested by UA functionaries, researchers and workers in the region. Some of the limitations on this issue include the misconception that gender means an increased number of participating women in a project. Secondly, the misinterpretation among project leaders, that consider a project to be gender focused when the direct beneficiaries are women. On the other hand, UA often seem to contribute more to the solution of practical needs (traditional roles, eg: provider of food needs) rather than strategic ones (health, education, equity, decision-making, rights and domestic violence). While there are some success stories accounted for on female leadership and political representation at the local and municipal level, changes to traditional perceptions will depend largely on whether gender analysis is incorporated in the design and implementation of projects.

Publication List and Brief Review

Project reports

- Informe Narrativo Parcial (Período junio 1999 a junio 2000), 17pp
- Informe Narrativo Final, Lima, abril del 2002, 19pp

Overall, the quality of these two reports is very poor, including the layout and presentation of results. The information provided is vague making it extremely difficult to quantify and assess results. Assessing project impacts was also a difficult task due to numerous gaps in the information provided. The report lacks professionalism and is saturated with censoring remarks as well as justifications over activities, results and objectives that the project was unable to achieve. In addition, the information presented in both reports is nearly identical, with slight variations in the presentation and content. In the first narrative report, seven annexes were attached and they include mapping of UA experiences in Chile, Peru and Argentina, research

protocol, methodological tools, directories of UA institutions, case study selection criteria, financial report and activities programmed.

Project documents

Benavides, Marisela. 2000. “Entrevista a informantes claves y recolección de información secundaria: Instrumento Metodológico”. 5pp. June

Figueroa, Juan Francisco. 2000. “Diagnóstico y mapeo de la existencia de agricultura urbana en la región metropolitana de Santiago y V Region Valparaíso – Chile” Santiago, Chile. 12pp.

This document includes graphs, database and master form for interviews.

Figueroa Vera, Juan Francisco. 2000. “Directorio general de instituciones que realizan actividades de agricultura urbana (Santiago, Chile)”. Santiago, Chile, August. 16pp.

Feliu, Patricia. 2000. “Dagnóstico y mapeo de la actividad de agricultura urbana: Ciudad de Buenos Aires y conurbano bonaerense, Argentina.” Buenos Aires, July. 59pp

López, Teresa. 2000. “Encuesta para medir el impacto socio economico de la agricultura urbana en América Latina y el Caribe”. REDE, Lima, 12pp

Palomino Santolalla, Ruth. 2000. “Guía de procesamiento y análisis de los resultados de los TEP (talleres de evaluación participativa)”. REDE – CEPREN, Lima, April. 7pp

Palomino Santolalla, Ruth. 2000. “Guía para la realización de los talleres de evaluación participativa de las intervenciones en agricultura urbana”. REDE – CEPREN, Lima, April. 34pp

Ramírez, Yolanda. 1999. “Diagnóstico y mapeo de la existencia de agricultura urbana en Lima metropolitana”. AIDER, Lima, November – December. 13pp

REDE. 2000. “Protocolo de Investigación: Metodología para el diagnóstico de intervenciones en agricultura urbana en América Latina. June. 34pp

REDE. 2000. “Taller de evaluación participativa”. 6pp

REDE. 2000. “Directorio general de instituciones dedicadas a las actividades de agricultura urbana en Lima – Peru”. Lima. 15pp

REDE. 2000. “Experiencias de Agricultura Urbana en América Latina” (Guía). Lima. 5pp

REDE. 2000. “Experiencias de Agricultura Urbana en América Latina – Lima”. Lima. 27pp

REDE. 2000. “Guía metodológica para la realización de diagnóstico general y mapeo de agricultura urbana”. Lima. 17pp

III. Conclusions and Recommendations

Agricultural activities are not new in the urban context, however because of the increasing migration of the rural poor to urban areas, it has become a popular alternative strategy for food security and is an increasingly growing economic activity. The implementation of urban agriculture projects in Latin America and the Caribbean at the local and regional scales presented in this report made possible the unfolding of key issues surrounding the topic. The review and assessment of project results and impacts has enabled the identification of strengths, weaknesses and challenges faced by urban agriculture. It was also possible to identify the various stakeholders involved (communities, researchers, civil society organizations, local and central governments) and their functions at the local, national and regional levels.

It is evident that the diversity of agricultural activities has played an important role in the solution of existing socio-economic, political, cultural and environmental problems in the urban setting. Results and impacts of the first generation of projects made possible the identification of future research needs, including the search of more effective and efficient strategies for the recognition, support, promotion and establishment of urban agriculture. This led to the implementation of a second generation of projects with regional coverage that were effective in the mainstreaming and lobbying of urban agriculture as well as in the development, implementation and dissemination of more participatory methodologies.

In terms of project results and impacts, the strengths of UA activities and projects depend on the following aspects:

At the local approach level:

1. The importance of agricultural activities **in food security and income generation**. An interesting research finding showed that although UA is generally practiced by the poorest segments of the population, in the state of Ceara (Brazil), UA is practiced by people from various economic backgrounds.
2. Urban agriculture facilitates the **social integration of** rural immigrants into the urban reality while allowing them to maintain their culture and traditional practices. This is particularly true in the case of rural immigrants from Ceara (Brasil), Santiago de los Caballeros (Dominican Republic) and Port-au-Prince and Gonaives (Haiti).
3. The **social inclusion of vulnerable groups** into urban agriculture activities through community participation resulted in a greater sense of community. This increased sense of community contributed to the improvement of sanitary conditions in neighbourhoods and the general health of individuals.
4. The success of UA projects depended on the **relevance of project objectives to the interest and needs of the urban actors** involved (farmers, civil society, governments, etc.). By effectively addressing the needs of principal actors, research teams were able to increase

awareness and succeed in their goal to include UA in land use and municipal plans. A concrete example is the Municipalities of Santiago de los Caballeros (Dominican Republic).

5. **Government support** in UA activities plays a key role in the development of more efficient agricultural production strategies. An example of this is the case of Havana (Cuba), where government decentralization strategies have contributed to the promotion and development of UA, bringing about the evolution of several urban agricultural production models and structures.
6. Through urban agricultural projects it has been possible to effectively address and provide **solutions to urban environmental problems and conflict**. In the case of Cochabamba (Bolivia), for instance water is a scarce resource. The need for this resource has resulted in conflict between the two main actors (communities and government). Through this project, the implementing agency was able to identify key actors and stimulate dialogue between them, which resulted in the signing of a collaboration agreement.

At the regional approach level:

1. The use of **sound and innovative methodologies** contributed to the mainstreaming of UA and its inclusion in land use and municipal development plans. The highly participatory and consultative processes contributed to the construction of dialogue between government and civil society resulting in:
 - development of local partnerships (signing of cooperation agreements, etc.);
 - development of multi-stakeholder processes;
 - development of technical capacities through various dissemination and training strategies;
 - strengthening of local and regional networks;
 - a more critical reflection on local UA developments (UA dynamics, policy framework interventions and actor's roles);
 - linkage of action-oriented processes with political processes;
 - a more participatory management of projects;
 - a more regional vision; and
 - an effective entry point for poverty alleviation and urban governance.
2. The role played by **regional networks** has been key in the scaling up of UA while also contributing to the dissemination, exchange and discussion of project information and future research needs.
3. The **use of the World Wide Web** proved to be a powerful tool in the dissemination of information and cognitive processes and methodologies used in the various research activities.

Among the weaknesses and needs identified for the development of UA projects are –

At the local approach level

1. The presence of weak government structures and lack of technical capacity;
2. Limited knowledge of research teams in socially inclusive methods (case of Bolivia), and multi-disciplinary approaches (Haiti);

3. Too much dependency of project beneficiaries on research teams in management of capacities and resource mobilization (Haiti);
4. Limited timeframe for the implementation of projects introducing new technologies (Haiti);
5. The need for more research on the following topics: irrigation water issues, gender, commercialization strategies, public policies and awareness, and the evaluation of socio-economic impacts with relation to UA; and
6. The need of local policy frameworks that integrate UA.

At the regional approach level:

1. In general, the following needs were identified:
 - Proper follow up, documentation and systematization of project results;
 - Monitoring of impacts and changing features in urban dynamics;
 - Further elaboration of practical tools for policy formulation (land use planning, etc.),
 - Development of further capacity in project management and implementation in order to be more sustainable and less dependant on IDRC funds; and
 - Development of better working relationship with existing networks (case of REDE and AGUILA).
2. In the case of projects requiring specific country information (Wastewater Reuse Project), the collection of information was hindered by the lack of collaboration from relevant national institutions.
3. The capacity of selected recipients has been limited by an increasing demand for UA support activities. Examples of these limitations include the underestimation of human resources needed for the realization of the Regional Training Course and increasing demand in project formulation support for Best Practice and City Consultation.

In terms of human resources development, similar impacts were achieved in both the local and regional projects. All recipient institutions claim to have acquired further knowledge and understanding of UA as a distinct activity and not as an activity under the scope of traditional agricultural practices. Furthermore, partners are beginning to recognise UA as a development strategy that is not only limited to addressing food insecurity and poverty alleviation but can also be used to reduce gender inequities and improve local governance.

With regard to approaches and quality of the research, presentation of project publications and reports there are differences between research and development implementing agencies. Participatory approaches seem to be used more effectively by development agencies such as CARE – Haiti and the Urban Management Program, while the quantification of results and impacts were more effectively presented by research institutions like CEUR – PUCMM. To bring balance to this situation, it would be suggested that development – implementing agencies receive further support from research institutions during the formulation and implementation of project activities.

To conclude, the overall challenges faced by UA are mainly determined by socio-economic, political and environmental conditions in each local context. However, the development and mainstreaming of UA practices is most often affected by political-economic agendas at the national level. Among the main challenges identified are:

1. Politicization of UA resulting in limited development of a true participatory process (Cuba), use of project results in political agendas (Dominican Republic), and conflict between main stakeholders (Bolivia).
2. UA is still considered an isolated activity when it should be considered a catalyst for development (Brazil).
3. Imposition of new economic models further aggravates poverty, having a negative impact in community participation, structures and organization (Bolivia).
4. UA is still approached as conventional agriculture practice, when it should be approached differently and considered as a fixed activity in land use management plans.
5. UA projects should be designed to develop capacities and not dependencies.
6. To date, UA projects mainly address the practical/basic needs of women, when more attention should be paid to the development and support of strategic needs (more participation, equal rights, etc.).
7. Lack of enabling policies to improve access to land, capital/credits and local markets.
8. UA research initiatives need to reach specific segments of the urban poor (indigenous and Spanish-afro communities).
9. UA activities need to be further documented.
10. Development projects are more likely to be funded than research projects (Evaluation methodologies).

APPENDIXES

APPENDIX I

Table 1 – Results and Objectives: The Management of Solid Waste and Urban Agriculture (UA) in the City of Santiago de los Caballeros, Dominican Republic (002759)

Objectives		Results	Methodology
General	Specific		
To describe and assess ongoing peri and intra-urban agricultural production and waste management in the city of Santiago de los Caballeros. It will examine the cost and benefits of current practices in both sectors and recommend a program to stimulate the reuse of municipal waste by agricultural production in the city	To describe current nature & extent, & assess growth potential for specific agricultural production systems in specific areas, both intra-& peri-urban, as well as the current status of fluid & solid waste management & the reuse potential of waste by aforementioned agricultural systems	<p>-In terms of land use, approximately 16% (1153Ha) of the total urban and peri-urban area (6401Ha) in Santiago is dedicated to UA</p> <p>-Most people practicing UA in Santiago are from poor families that use available urban spaces to grow food to complement their diet</p> <p>-UA in Santiago is considered a precarious activity due to an uneven competition between (residential development) and agriculture</p> <p>-Construction displaces urban farmers. This process is known among national urban professionals as location—substitution—re-location cycle</p>	<ul style="list-style-type: none"> • Quantitative - Statistical analysis (stratified random & cluster sampling) - Population census - GIS, & cartographic documents (maps, sat images, aerial photographs) - Soil classification & sampling - Physical & chemical analysis of solid waste (field & lab work)
	To prepare a cost-benefit analysis in economic, environmental & social health terms of current agricultural production & waste management in the city from an economic, environmental, health & social view in the agricultural sector & solid waste management	<p>-A diagnosis of the solid waste situation in Santiago that included quantification and classification of: total waste production by social sectors, composition, mode of transportation, final disposal, legal & administrative aspects, recycling circuits, re-utilization of potential residue & mapping of informal disposal sites</p> <p>-A diagnosis of Santiago's agriculture by blocks in neighbourhoods and peri-urban zones</p> <p>- An economic analysis for solid waste management & agriculture</p> <p>-The use of GIS in the elaboration of important maps</p>	
	To elaborate propose & discuss a program to stimulate UA & its relationship with solid waste recycling	<p>-Important relationships between solid waste and UA: use of residues in agriculture, and the role of agriculture in city's waste management established</p> <p>-6 project proposals related to the management of solid waste in municipal dumping sites, hospitals and markets.</p> <p>-Elaboration of proposals for the development of an integrated program of waste management and urban agriculture</p>	

Table 2 – Impacts: The Management of Solid Waste and Urban Agriculture (UA) in the City of Santiago de los Caballeros, Dominican Republic (002759)

Areas of Impact	Results
Human resources development	<ul style="list-style-type: none"> - Research team improvement on GIS knowledge and techniques providing new skills for future projects - Team professionals acquired knowledge and new perspective, and are clear on the differences between rural and UA - Implementation of workshops at various community and government levels; seminars; courses, tutorials and workshops in the Urban & Municipal Planning Masters program; courses in the Environmental Management Postgraduate program diploma; support (collaboration & consulting) from foreign students and; participation in international conferences - Various types of publications including a book, 7 newspaper articles (5 in local & 2 in international papers), 1 booklet
Institutional capacity building	<ul style="list-style-type: none"> - Creation of a high quality database to be used in planning and development projects, and future research in Santiago - Creation and experimentation of a methodology that can be applied in other cities - Greater availability and accuracy of city data for university students and CEUR clientele - Improvement on the operative capacity of CEUR's cartography laboratory, new equipment and programs for GIS use
Effective local partnerships	<ul style="list-style-type: none"> - Creation of inter-institutional co-operation agencies amongst organizations responsible for the administration of the city, community committees and academic programs - Inter-institutional collaboration among different organizations resulted in elaboration & formal presentation to municipal authorities of the Document "Proposal for the Management of Solid Waste in Santiago"; proposals within the aforementioned document are related to the creation of Santiago's Solid Waste Integral Management Plan, which led to the establishment and official constitution of the Santiago Solid Waste Commission by Santiago's Municipal Council - The type of collaboration created and reputation of the research institutions motivated the central government to offer support for a training program & guarantee other projects within relevant government departments & international organizations - Collaboration of a private enterprise through the provision of staff and equipment during the fieldwork - <i>Negative:</i> impacts reported during the assessment of the project include the following: researchers faced major difficulties during the work and collaboration activities caused by conflicts among political parties; the manipulation of research data for political purposes and; CEUR's findings revealed the serious institutional-administrative limitations, in-efficiency and political bias of the city council
Contribution to multi-disciplinarity	<ul style="list-style-type: none"> - The research team was composed of professionals from various disciplines (biology-ecology, economy, agronomy, planning, environmental engineering, soil sciences, geography and GIS)
Scientific methodological advances	<ul style="list-style-type: none"> - 1st diagnostic study to produce a high quality database for decision-making in the management of solid waste. The accuracy of procedures & efficacy of field surveys demonstrate flexibility of methodology & its applicability - The project represents the first comprehensive study in the Dominican Republic on UA at a city scale
Research results utilization	<ul style="list-style-type: none"> - The application of research results has been one of the main concerns in this study. Several project proposals have been developed with support from Santiago's Municipal Council and other organizations - Santiago Council's Sanitation Department, based on the study's results on institutional and financial aspects, is requesting CEUR's collaboration in the creation of an improved administration plan
Fund leverage	<ul style="list-style-type: none"> - A key element to the sustainability of the project involved local participation through parallel funding (60,000RD) and in-kind contributions (personnel & equipment) from private enterprises - Several support projects associated to this research have been funded by international foundations (270,000USD), the central (220,000RD) and local governments (300,000RD and 10,000RD monthly) - International initiatives have also emerged from this research project between CEUR and the University of Fritzburg (Germany) and one with the University of Huelva from Spain

APPENDIX II

Table 1 – Objectives and Results: Evaluation of Urban Agriculture as a Component of the Local Economy in Two Zones of Havana, Cuba (03753)

Objectives		Results	Methodology
General	Specific		
To assess the potentials of UA as a dynamical agent in the local economy, and its short and mid term integration to the remaining components that might be present	To characterize the local economy	<p>-Establishment of 15-member inter-disciplinary & inter-institutional team to look at UA– urban environment interactions</p> <p>-UA has been a major contributor to food security for the population of Havana City. Availability of vegetables & fresh herbs has reached yields between 150 & 200 g/per capita/day</p> <p>-Future research must include the evaluation of community economy, relationships & informal economy clusters</p> <p>-Comprehensive overview of UA evolution, the evolution of UA in Havana has given rise to 5 different urban food production systems. This evolution has been facilitated by government decentralization strategies for the promotion and development of UA, and adjusted accordingly</p> <p>-Commercialization opportunities identified contributed to the development & strengthening of the activity. Is evident UA intervenes in formation of a local economy</p> <p>-Mainstreaming of UA production done in 3 ways: horticulture/small farmers clubs; services & credits co-operatives, basic production unit co-operatives</p> <p>- Evaluation of UA in 2 zones of Havana that included analysis of technological systems, benefits, use of waste-water, review of existing support and collaboration strategies to farmers, physical and environmental conditions. In the case of Havana Metropolitan Park, UA activities are handled in the same way as traditional rural farming activities. Workshop results concluded that, instead, UA should be approached as such and considered as a fixed activity in land use and management plans</p> <p>-Gender dimension in UA must be considered beyond quantification of women participating in technical & productive activities</p> <p>-Situation of irrigation water in UA requires greater emphasis in research & project development. Need to propose & implement alternative solutions to the problem.</p> <p>-The book “Agricultura y Ciudad: Una clave para la sustentabilidad”, published through AGUILA Network.</p>	<p>-Field research through workshops & meetings for the analysis of information.</p> <p>-Compilation of documents elaborated by individuals & institutions in their area of expertise.</p> <p>-Consideration of local & national changes into the research.</p> <ul style="list-style-type: none"> • Qualitative tools used <ul style="list-style-type: none"> - consultations with experts - structured and semi-structured interviews with farmers - field observations - informal interviews with key and outside informants were also used to collect quantitative information • Quantitative tools used <ul style="list-style-type: none"> - Censuses - publications and reports
	To explore land management options including UA		
	To recommend suitable UA systems & tenure arrangements for two city sectors		
	To assess the market potential for UA production & products; UA impact on nutrition, employment, food price behaviour; impact of foreign aid on UA projects; water & waste reuse by UA; food processing & the role of women		
	To socialise the research within the country and the AGUILA network through a participatory communication process that will be present throughout the research and that will be shared with institutions and population involved		

Table 2 – Impacts: Evaluation of Urban Agriculture as a Component of the Local Economy in Two Zones of Havana, Cuba (03753)

Areas of Impact	Results
Human resources development	<ul style="list-style-type: none"> - Research team participated in 7 workshops and more than 40 working meetings and consultations - Interaction between recipient NGO and other partners, including member of the research team, through the establishment of working relationship with government institutions and farmers that participated in the analysis of results - Exchange of experiences and discussions on the researched topics in local and regional events allowed the interaction of the research team with other regional partners - Researchers gained greater objectivity and broadmindedness to evaluate the implications of sectorial management in UA. - Identification of key actors management of urban environment, including evaluation of economic, technical, agricultural and environmental aspects involved - A participatory communication process & finding common language among UA researchers & professionals achieved at national/regional level
Institutional capacity building	<p>The project enhanced the institutional capacity of FUNAT through the following:</p> <ul style="list-style-type: none"> - Development of UA program working objectives, including the elaboration, presentation and approval of several projects - Influencing UA problematique in the country & region, including growing relationships with other national/international inst.& org. - Strengthening of capacities among institutions, experts, farmers & collaborators by facilitation of resources, training & fieldwork. - Better prepared in terms of human-material resources, & inter-institutional relationships to organize regional project meetings including AGUILA's 2nd general assembly, national/ international events for project results outreach
Effective local partnerships	<ul style="list-style-type: none"> - Experts from government and academic institutions were part of the research team. - Implementation of new experiences (organic waste selection and recycling) in one area effectively established relationships among farmers, consumers & local government - Relationships strengthened with representatives from foreign institutions supporting local NGOs - High degree of inter-institutional collaboration at the regional level that included consultancy activities between research team & cities of Cuenca (Ecuador) and Santiago de los Caballeros (Dominican Republic)
Gender focus	<ul style="list-style-type: none"> - The implementation of a gender training workshop with the support of IDRC and Cuban experts - 47% of the research team members were female. - <i>Negative:</i> with the exception of information collected in the two areas of study there is insufficient information on gender and UA
Contribution to multi-disciplinarity	<ul style="list-style-type: none"> - Lack of a multi-disciplinary approach in Cuba, however research project took into consideration aspects and criteria from the fields of agriculture, forestry, geography, agronomy, animal sciences, architecture, hydraulics, sociology, biology & information sciences - Research team better prepared to implement research projects with a multi-disciplinary perspective, including gender. This experience will help farmers and technicians to transmit a more integral view on UA
Scientific methodological advances	<ul style="list-style-type: none"> - 1st experience in Havana that treats UA as an integral activity including its relationship to the urban environment - A number of results were considered novel for the improvement of UA in Havana and the rest of the country - Identification of ways to achieve greater environmental & economic sustainability in UA & recognition as key component of local economy - The participatory communication process allowed greater organization-systematization of results & contents of information and topics addressed
Research results utilization	<ul style="list-style-type: none"> - Research results may be useful to other countries and could be used as reference in regional projects - The knowledge gained by the project team, research results and working relationships established in the implementation have resulted in a more participatory process with greater outreach
Fund leverage	<ul style="list-style-type: none"> - Using project results, researchers were able to secure funds from other donors. For instance, the project has situated the NGO in a better position to attract additional resources for strengthening its institutional capacity, training of field staff, project development and presentation, and its relationship with the AGUILA Network and other international institutions - International organizations are funding projects that arose from this activity, such as the Australian Conservation Foundation, OXFAM Canada (95,200CAD), CIDA (150,000CAD), the German organizations Heinrich Boll Foundation & the NGO KATE & Puente Norte-Sur

APPENDIX III

Table 1 – Results and Objectives: Reuse of Wastewater in Agriculture, Cochabamba, Bolivia (00921)

Objectives		Results	Methodology
General	Specific		
<p>Define urban-rural trends in the marginal areas of Cochabamba, and identify actions to reduce soil and water contamination through research mechanisms for reducing negative impacts in human health and food production</p> <p>(Take actions) To involve local communities in socio-economic and environmental decisions affecting their lives, and to achieve reasonable education levels and productive skills in the sustainable use of available water and soil resources</p> <p>Evaluate actual development of socio-economic activities in marginal settlements in Bolivian cities, more specifically, human behaviours that affect the environment and quality of life in neighbourhoods and communities</p> <p>Promote local debate on government development policies from a local dimension, and the true natural resources potential in which neighbourhoods can expand</p> <p>Evaluate the potential of more sustainable systems and technologies to value and protect resources through local initiative that involve individuals in productive activities at the household & community level</p>	To evaluate the state of natural resources through an EIA. This study will allow the establishment of policies and action that can be developed to improve actual conditions	-Main pollution agents of soils & water sources: surface water from untreated rivers & canals; irresponsible use of agro-chemicals & untreated wastewater for irrigation. -Greatest sources of contamination: wastewater from 2 rivers in the area; faulty pipes from sewers system; illegal perforation of sewers' pipes by farmers & increased presence of detergent in water sources -Soil salinity accelerated by intensive untreated wastewater irrigation.	<p>-Tools: maps, photographs & field observations, field visits & inf. support & data interpretation, structured interviews</p> <p>-Stage 1- carried out in 7 steps: gathering info.; delimitation of area of study & selection of samples; characterization area of study: detailed description; selection of sampling points (testing & collection of water samples); EIA of selected areas to assess damage caused by wastewater usage on natural resources; socio-economic survey; training workshop & information session for various actors</p> <p>-Stage 2: developed around action-research methodology & participatory tools: training sessions; support activities to develop capacity & to preserve traditional practices; promotion activities to support local sustainable initiatives; round tables, awareness campaigns, and short courses</p> <p>-Stage 3: lobbying campaigns & legal framework in place; education campaigns (water use & preventive health); seminars & meetings with local authorities</p>
	To produce and set up information for the underpinning of scientific knowledge and actions in the environmental conservation of La Maica	-Wastewater evaporation: a main air pollution agent -Increased presence of salt resistant plant spp. & aquatic plant communities in flooded areas; population of aquatic birds; increase in health problems due to vector diseases & micro-organisms present in untreated waters -A thorough EIA of the study area	
	Use scientific methods to measure the impact of agricultural activities in Cochabamba's underground waters	-SEMATA is now interested in improving quality of services, seeking credits for purpose -Several meetings with government/private institutions international aid agencies & community organizations to discuss co-operation agreements	
	To elaborate recommendations to minimize environmental impacts from on going socio-economic activities	-Workshop "Environmental Pollution Caused by Wastewater Use in Agricultural Activities" -Multi- stakeholders seminar on the reuse of treated wastewater -2 workshops for local leaders on "Contamination problems in water – Strategies & 8 field visits to communities	
	To warn neighbourhoods and local communities about the negative impact of the excessive use of agro-chemicals	-Individuals reluctant to discuss the use of water for irrigation, as project evolved there was increased consensus among farmers & users about needs to improve quality of treated waters -Publication of 2 booklets on Law 2029 – Privatization of water services and alternative proposals	
	To promote the efficient use of irrigation water in semi-arid climates through the implementation of local household and collective technologies	-Need of public awareness at all levels. Progress in this front included consensus on need of legal framework & more integral approaches to face problems with local authorities -Women not organised. However situation changing with time	
	To support and organize education programs for professionals, neighbourhood & community leaders to ensure availability of adequately trained human resources in environment and rural-urban agriculture	-Working meetings about contamination of water resources and the utilization of marginal areas for vegetable production in solar tents with 6 families from communities south of Cochabamba	
	To support, coordinate & start efforts to rescue traditional knowledge for use in sustainable develop. Knowledge models		
	To recommend cheap and efficient techniques in wastewater use		
	To transfer knowledge on organic UA among neighbourhoods & small peri-urban communities		

Table 2 – Impacts: Reuse of Wastewater in Agriculture, Cochabamba, Bolivia (00921)

Areas of Impact	Results
Human resources development	<ul style="list-style-type: none"> - Several working meetings organized by CREAMOS with communities south of Cochabamba benefited the project. Meetings evolved around the contamination of water resources and the utilization of reduced (marginal) areas for vegetable production in solar tents. The activity involved experiments with six families that experienced the benefits in their diet and household economy - Neighbourhood leaders educated through meetings & environmental training courses about the need to improve water use and proper disposal of wastewater. Unfortunately, these activities have been jeopardized by political and religious interference - “Environmental Pollution Caused by Wastewater Use in Agricultural Activities” delivered to 30 participants including peasants, municipal & community leaders & dairy farmers. Research team’s participation in this activity established basis for open dialogue to discuss local problems - 53 people from 22 different entities & 11 local producers attended multi-stakeholder seminar on the reuse of treated wastewater - Local leaders attended the 2 workshops on “Contamination problems in water – Strategies”
Institutional capacity building	<ul style="list-style-type: none"> - Active participation of municipality, community and farmer’s organizations & research institutions of key importance for 1st phase - Gained experience with regards to administering the operational costs of conducting fieldwork and contracting of specialized services - Established working relationships with government institutions
Effective partnerships	<ul style="list-style-type: none"> - The municipality of Cochabamba provided the research team with relevant information about the Urban Management Plan for the city. - Field visits to communities within the area of study enabled first contact with farmers - Met with government institutions, international aid agencies and community organizations to discuss co-operation agreements helped to identify and facilitate discussions between antagonistic parties - Multi-stakeholder seminar resulted in establishment of Analysis Group on Water Contamination & Possible Solutions & endorsed by a Member of Parliament, water & non-governmental organizations, and CREAMOS - CREAMOS’ local prestige heightened, organisation invited by SEMAPA to participate in process to resolve requests for greater access to treated wastewater by different farmers groups competing for this scarce resource - Through meetings with local and central government institutions, community leaders and SEMAPA, CREAMOS prepared and impelled the signing of a collaboration agreement between SEMAPA and the National Irrigation Office No. 1 - Draft proposal elaborated in collaboration with CODAC & Parliamentary Brigade for recovery of Rocha river watershed: will discuss in Congress
Gender focus	<ul style="list-style-type: none"> - In the diagnostic study more women were interviewed than men since they were more likely to be home at the time of the interview - 10 women registered for workshop on Environmental Pollution Caused by Wastewater Use in Agricultural Activities
Contribution to multi-disciplinarity	<ul style="list-style-type: none"> - Multi-disciplinarity of research team made possible analysis & realisation of tasks from legal-political, technical & socio-economical perspectives - Need to incorporate full time sociologist & rural extension workers to improve co-operation between researchers & communities
Scientific methodological advances	<ul style="list-style-type: none"> - Democratization of analysis & new ways of perceiving solutions. Methodology used permitted ID of true local actors
Research results utilisation	<ul style="list-style-type: none"> - It is expected that results from diagnostic study of the research area will be analyzed and discussed by local and regional institutions, to elaborate plans and programs related to the objective of the project - CREAMOS studied set of possible needed action to address several problems that would be discussed in a roundtable - These actions are oriented towards greater community awareness, participation and training activities; inter-institutional collaboration, etc. <i>Negative:</i> with the exception of two workshops, none of the actions proposed were successful due to bureaucratic impediments
Fund leverage	<ul style="list-style-type: none"> - In kind contribution from individuals & institutions that assisted in the realisation of the first workshop & materials needed, water analyses and cartographic information. <i>Negative impact:</i> CREAMOS submitted a project proposal to the central government; unfortunately it did not get support because of the lack of interest from the communities

APPENDIX IV

Table 1 – Objectives and Results: Urban Horticulture Technologies in the Cities of Port-au-Prince and Gonaives, Haiti (03152)

Objectives		Results	Methodology
General	Specific		
<p>Introduction, transfer & adoption of long-term horticultural production technologies in selected areas</p> <p>Management of solid & liquid waste in areas selected. In 3 years have in place an environment friendly, institutional & technical support system for UH</p>	To improve capacity of community structures to support UH activities	<ul style="list-style-type: none"> -Improvement in the household diet -Knowledge transfer: child-parent & project participant-family/friend -Creation of local network CODAGRU -Baseline survey used to assess and select project zones in Port-au-Prince. 	<ul style="list-style-type: none"> -Selection of project areas -Formal and informal partnerships -Training sessions: action-research, reflection, crossed visits & tech. demo.
	To strengthen competence of project extension staff, facilitators & participants	<ul style="list-style-type: none"> -244 participants from Port-au-Prince, mostly women helped by this project - Production of training manual based on participatory methods & translation/reproduction of FAO UA marketing manual in Creole 	<ul style="list-style-type: none"> -Formal and informal partnerships
	To identify, test, demonstrate & disseminate locally appropriate UH technologies	<ul style="list-style-type: none"> -238 gardens supplying 847 households or 5130 people (app.6/pers per family) -Used tires were the most popular containers -Swiss chard was the most rewarding crop (high yield, low input needs) 	<ul style="list-style-type: none"> -Formal & informal partnerships -Demonstration gardens -Learning by doing: establishment of vegetable gardens -Follow up & evaluation (mid-year, mid term) -Final external participatory evaluation
	To identify income-generating activities through UH practices that will stimulate the creation of small business & increase employment opportunities for shantytown residents	<ul style="list-style-type: none"> -Sale of vegetable and compost surpluses -Establishment of 2 input outlets & 2 tree-nurseries 	<ul style="list-style-type: none"> -Training sessions on the establishment of small business, & the establishment of fruit-tree nurseries
	To raise local residents' awareness in project areas about the need to collect waste in order to improve personal hygiene & environmental sanitation	<ul style="list-style-type: none"> -Participants experienced benefits of community participation in the improvement of living conditions. 	<ul style="list-style-type: none"> -Baseline study -Agendas for training sessions
	To instruct the establishment & operation of small-scale composting facilities for biodegradable solid waste	<ul style="list-style-type: none"> -Establishment of small-scale compost enterprises. Local organization established volume of 30 sacks & was negotiating a contract 	<ul style="list-style-type: none"> -Market-gardening training
	To use compost & wastewater in horticultural production	<ul style="list-style-type: none"> -More commonly used substrate was combined manure (cattle & horse) & soil -Participants watered with fresh & grey water (limited -lack of containers) 	<ul style="list-style-type: none"> -Formal & informal partnerships -Demonstration gardens -Learning by doing - establishment of vegetable gardens
	To significantly increase the potential of urban agricultural production through the expansion of cultivation areas	<ul style="list-style-type: none"> -Possible to produce high nutrition value food in unusual spaces -Project areas grew from 2 in 1996 to 16 in 1999 in Port-au-Prince & 3 in Gonaives. 	<ul style="list-style-type: none"> -Follow up & evaluation (mid-year, mid term) -Final external participatory evaluation

Table 2 – Impacts: Urban Horticulture Technologies in the Cities of Port-au-Prince and Gonaives, Haiti (03152)

Areas of Impact	Results
Human resources development	<ul style="list-style-type: none"> - 1,100 individuals (613 females & 487 males): 68 groups participated in training sessions to establish & operate urban gardens. 629 of the 1,100 individuals were evaluated, 391 among them 218 females successfully passed their evaluation & were certified - 2 local NGOs established input outlets. Didactic activities did not match literacy level of participants, visual methods recommended - 12 individuals (9 females & 3 males) representing 6 local organizations received training on nutritional value of vegetables - 19 individuals (9 females & 10 males) from two local organizations participated in training sessions on production in 3 nurseries - All participant organizations were trained on expense classification and preparation of financial reports
Institutional capacity building	<ul style="list-style-type: none"> - Methodology used became the model for dissemination strategies used in other CARE-Haiti agricultural projects - Project team developed several support tools (forms, calendars, sets of learning booklets, etc.), for follow up & evaluation - Local organization KIJEK began production of compost at commercial scale. By project end organization was in process of negotiating a contract for the production of compost - Strengthening of existing networks: most local organizations achieved a competency level to continue own UA activities - Partnership approach demonstrated to be an effective sub-funding system, reinforcing management/administrative capacity among partners
Effective local partnerships	<ul style="list-style-type: none"> - Formal partnerships between CARE-Haiti & 4 organizations deeply rooted in areas of intervention was critical in meeting objectives & facilitating project outreach - Informal partnerships with 8 local organizations & CASEC in project areas - The creation of the local network CODAGRU - Efforts were made to bring together the Mayors of 5 villages and the Urban Management Program from UNDP-HABITAT - CRDA has expressed interest in sharing knowledge with the different departments of the Ministry of Agriculture - Information exchange with international representations in Haiti, including field visits to project sites - Contacts established with SGUA & AGUILA Network. Information has been exchanged with the US based organization ECHO
Gender focus	<ul style="list-style-type: none"> - Gender component: important aspect in project design, implementation & evaluation. 68% of the gardens established belong to women - While men's role was usually limited to setting up the garden, women played a decision-making role in gardening activities becoming the main catalytic agents in the project. Project activities reinforced self-esteem among women
Contribution to multi-disciplinarity	<ul style="list-style-type: none"> - The project did not have a multi-disciplinary, team's capacity to intervene in areas other than agriculture was limited. Consultants were hired to bring balance in some of the project activities
Scientific methodological advances	<ul style="list-style-type: none"> - Training methodology based on learning by doing techniques giving participants the opportunity to discover basic production principles - Introduction of new horticultural techniques adapted to specific conditions of irregular settlements, using locally available material & human resources
Research results utilisation	<ul style="list-style-type: none"> - Elaboration of a training manual that resulted from an action-research workshop with project beneficiaries - Sections of the FAO Commercialization manual were translated in Creole and published - Increased interest among residents & community leaders from other shantytowns resulted in multiplication of intervention zones & reproduction of project activities in other areas of the capital - CARE-Haiti acquired experience & documentation of this process has become a source of information for CARE International offices in Zimbabwe & Afghanistan, & other local organizations - As a result of this project, special studies were commissioned on composting, mushroom cultivation, training and management
Fund leverage	<ul style="list-style-type: none"> - The project later evolved into a program within CARE-Haiti. This program & other programs from other development organizations were discontinued due to interruption of external funding linked to the country's political instability

APPENDIX V

Table 1 – Objectives and Results: Urban Agriculture in the Region Metro Fortaleza, Brazil (002748/002749/403764)

Objectives		Selected Results	Methodology
General	Specific		
Activity 1: Survey Lessons and Recommendations			
To document the extent and diversity of common UA practices in neighbourhoods and local projects using bibliographical and cartographic databases	To acquire in-depth knowledge of UA activities in Fortaleza	-12 representative cases selected based on the field analysis & bibliographic information to define an UA typology -8 UA typologies identified -4 case studies instead of 2 -7 variables assessed through a varying degree of indicators (2 to 8) -Kitchen gardening most popular activity that complements family diet & generate income -Establishment of study group	-Systematic sampling of UA activities using bibliographic and cartographic material -Selection of case studies using results from socio-economic study. Selection of representative situations, analysis of UA activities in 2 areas of study & analysis of 2 cases using structured & open-ended interviews, questionnaires, field-observation -Synthesis & dissemination through working groups and seminars
	To establish the bases for more in-depth research about the importance of agriculture in the urban context		
	To create a local working group in UA & reinforce the role of CIDADES as a reference centre for UA experiences in the city		
Activity2: UA: Sanitation & Income Generation			
To identify locally appropriate options for urban gardening & livestock raising, & fruit-tree gardening to generate income and to treat household wastewater	To implement concrete tests in areas covered by the Communities Program	-5 viability studies that included 4 field experiments with communities presented in reports -Experiments to assess the utilization of local bamboo species for construction purposes -2 proposals presented in the final technical report	-6 viability studies & 4 field experiments using socio-economic & diagnostic studies -Awareness activities through seminars and conferences with various sectors of the population in order to create a permanent working group
	To sensitize municipal & state government staff		
	To create inter-institutional & disciplinary multi-actor working groups		
	To elaborate a synthesis that will instruct a larger UA proposal for Metro-Fortaleza		
Activity 3: UA: From Experiments to Programs			
Based on research results from the 2 previous activities, this one was to allow CEARAH Periferia to pursue and launch new projects and building on the current momentum to elaborate & negotiate a metropolitan program for UA	To consolidate 2 ongoing small UA project experiments & initiate 2 new ones	- PVC cages have greater stocking capacity are cheaper to build, lighter and easier to handle and more durable (don't oxidize) -Participatory planning & implementation of a aquaculture project in Penedo, construction of water-resistant wooden frames & mesh covers reduced costs by 20% compared to the structures built in Amanari -Development & implementation of 3 different activities with a non-for profit NGO: kitchen, fruit & medicinal plants gardening -Started medicinal plants gardening activities with the comm. of Genibau	-Participatory socio-economic diagnostics through field experiments -Training & strategic planning sessions through courses and seminars with multi actors -Training courses and awareness workshops for communities
	To provide training in production, processing & management		
	To share & debate results with multiple local actors		
	To expand Ceara State database for use by local partners		
	To exchange knowledge & information with other national groups & the AGUILA Network		
	To formulate a program proposal for Metro Fortaleza & submit it to national & foreign funding agencies		

Table 2 – Impacts: Urban Agriculture in the Region Metro Fortaleza, Brazil (002748/002749/403764)

Areas of Impact	Results
Human resources development	<ul style="list-style-type: none"> - 100 people including students from the ETFC, academics and technicians from the municipality attended 2 conferences on botanical aspects of bamboo and possible uses - 1 course in theoretical & practical aspects on floating cages construction and control and calculation on rationing was given to 6 fishermen from 3 communities - 3 training courses were given to members from the community of Genibau in the preparation of artisanal and home made herbal remedies and horticultural production
Institutional capacity building	<ul style="list-style-type: none"> - Technical meetings & seminars to 12 people representing municipal government institution, social & health workers, private sector, farmers & technicians from NGOs - 2 awareness seminars attended by 30 persons from the Communities Program, tenant's associations and NGOs - A cycle of 3 seminars to provide participants with technical & social knowledge related to UA in order to give them a better understanding of UA activities, potentials & perspectives. Notable was the focus on the generation of income & improvement on quality of life - Courses on vermiculture, composting, nurseries & gardening techniques and green vegetables and medicinal plants production were given to young residents and staff from Eunice Wever - 2 workshops on fisheries development for representatives from fishery institutions to help them identify training needs & staff qualification in this sector - 2 workshops on UA in collaboration with IDRC & ETFC. 26 representatives from various communities of the RMF & its peripheries attended the first workshop. 2nd workshops attended by guest speaker from French research institution
Effective partnerships	<ul style="list-style-type: none"> - Joint missions with the Department of Arts and Architecture from the University of Goias and other local institution on the research of potential use of Brazilian bamboo species for construction - Coordination of several activities as part of a community campaign at Park Havai in Eusebio to address water table contamination caused by individual cesspools - The creation of working groups resulting from the various technical meetings and seminars - Development of a partnership with the community of Genibau to establish a medicinal plants garden - Exchange mission between CEARAH Periferia and Dunkerque, France have contributed to the reinforcement of UA work with communities as well as partnerships with the urban community of Dunkerque
Gender focus	<ul style="list-style-type: none"> - Youth participated directly in the design and assembling of cages. 5 (1 female & 4 males) all grade 5&6 students, were selected to participate in the project from beginning to end - Research results confirmed the vocation of women from Genibau in the preparation of alternative medicines to treat diseases that frequently affect their children
Contribution to multi-disciplinarity	<ul style="list-style-type: none"> - A multi-disciplinary group that included an architect/urban planner, an agronomist, a geographer, and an engineer in fisheries composed the CEARAH Periferia team. - The viability study on horticulture and fruit tree reforestation brought together agronomists, urban planners and sociologists to assess and categorize the types and potentials of urban spaces for the development of UA activities
Scientific methodological advances	<ul style="list-style-type: none"> - "Survey Lessons and Recommendations" - first study in the RMF that address UA specifically - New knowledge acquired by the research team on the development of agro-pastoral activities in the urban environment
Research results utilization	<ul style="list-style-type: none"> - 3 of 5 viability studies developed into the promotion of awareness seminars and re-deliverance of their results. - Members of project team actively collaborate in yearly regional events
Fund leverage	<ul style="list-style-type: none"> - An exchange mission visited Dunkerque, France to exchange experiences on organic agriculture & certification of organic products, and to look for new partners to continue the project

APPENDIX VI

Table 1 – Results and Objectives: Urban Agriculture and Feeding the Latin American & Caribbean Cities: Best Practice and City Consultation (04155)

Objectives		Selected Results	Methodology
General	Specific		
<p>To assist a group of resource & associate cities in the documentation of UA experiences</p> <p>The activities include:</p> <ul style="list-style-type: none">- the documentation of UA experiences in 5 resource cities- the production of diagnoses of UA activities in 4 associate cities, and- the implementation of a city consultation process in one associate city <p>This process is to facilitate the formulation of a concerted action plan & specific related projects, to systematize & disseminate its methodology & results to other interested cities in the region</p>	<p>To document, review & share significant UA experiences, either ongoing or recently carried out at municipal &/or community levels, paying particular attention to the roles & benefits accruing to different stakeholders in 5 resource cities</p>	<ul style="list-style-type: none">• <i>Knowledge management:</i> Several project reports & publications documenting project methodologies, implementation & results. Publications include manual, magazine articles, baseline studies, short articles, websites & CD ROMS• <i>City Consultation & Action Plan: Metropolitan District of Quito</i> 1 baseline study on UA; actors involved in UA in Quito identified; 1 Action Plan for UA development drafted & discussed in a multi-stakeholder forum• <i>Priority Action Programme: (Ecuador)</i> <u>El Panecillo (Municipality of Cuenca):</u> 1 inter-actor agreement on the development of the Action Programme-financial support from the municipality, elaborated & signed; 1 socio-economic baseline study; micro-credit seed fund established, credit management committee formed & criteria for operational base defined; 4 UA pilot projects developed: households trained in ecological production techniques, transformation & commercialization of agriculture produce, composting & vermiculture; 3 business plans elaborated for the formation of 3 agro-industrial micro-enterprises; UA Action Programme contributing to social inclusion of vulnerable groups; income & employment generation for 23 families involved in agro-industries; environmental management through waste recycling & reforestation; and participatory governance through community influence on political decision-making <u>Municipality of Quito:</u> proposal for regulations on land access for UA presented to Municipality; UA recognized & included in Quito general land use plan; project document for up-scaling of the UA programme to the Metropolitan District of Quito elaborated• <i>Lobbying</i> 1 LAC City Working Groups on UA & Food Security formed, 40 cities of the region represented; a Quito Declaration on UA formulated & signed by all 40 member cities• <i>Institutional anchoring/mainstreaming:</i> 1 formal co-operation agreement signed-UMP-LAC/IPES & ETC/RUAF. UMP-LAC selected as RUAF Regional Focal Point. Collaboration with RED AGUILA & FAO strengthened. 2 case studies added to the HABITAT Best Practice Database. Summaries of the Cuenca & Havana experience included into the KIT “Ciudades y Medio Ambiente” elaborated by UMP, IPES, CESEM, FMCU & and HIC. UA included in other UMP-LAC City Consultations & programmes. And UA recognized as a strategy for municipal development by other UMP regional offices	<p><u>Level 1 – Resource & associate cities:</u> <i>Case study</i> provided means for better understanding on the development of & types of UA municipal programmes, & potential guideline to develop similar programs in the region</p> <p><i>Baseline studies</i> or participatory diagnostics: involved analysis of quantitative & qualitative data around key issues on UA. Techniques used: rapid visual diagnostic, random sampling & surveying, surveying of pre-selected samples, field observations & workshops</p> <p>Tools used: questionnaires, maps, structured interviews and city consultations</p> <p><u>Level 2: Implementation-city consultation on UA:</u> -Analysis of baseline studies results during international seminar-workshop by Mayors & UA professionals -Outcomes used for development & implementation of city consultation process in a competitively selected associate city. Quito selected -Multi-stakeholder issue –scooping seminar to discuss baseline study & to come up with City Action Plan Action -Plan drafted contemplated priority action programme, pilot projects, institutionalization and systematization and dissemination -4 projects in barrio El Panecillo & other UA activities</p>
	<p>To design & produce baselines on the significance, benefits & constraints posed by current UA activities in 4 associate cities, where local governments wish to assess the need for greater support or better management of such activities within improved urban management strategies</p>		
	<p>In one selected associate city, oversee, advise, support & disseminate a multi-stakeholder city consultation on UA, to instruct the formulation of a concerted action plan & specific related project focusing on UA</p>		
	<p>To enable resource cities to share their own experience, advise the city consultation & report on consultation process to associate cities where baselines were carried out</p>		
	<p>To enable interested domestic & international co-operation agencies to advise the formulation of the action plan & to express possible interest in supporting technically &/or financially their implementation</p>		
	<p>To identify training capacities locally available or not in the field of UA, required by stakeholders to implement the action plan & related project, as well as to disseminate experiences widely through the region</p>		
	<p>To promote, where appropriate, in other UMP-LAC city consultations, the inclusion of UA in local agendas; and</p>		
	<p>To promote closer interaction between regional experts networks such as AGUILA & regional networks of local authorities, such as IULA-LAC, FEMICA, Metropolis, Red de Asociaciones Municipales & others.</p>		

Table 2 – Impacts: Urban Agriculture and Feeding the Latin American & Caribbean Cities: Best Practice and City Consultation (04155)

Areas of Impact	Results
Human resources development	<ul style="list-style-type: none"> - <i>Research team</i> – IPES/UMP-LAC have built their knowledge & understanding of: UA in the region; the notion of UA & its relationship with other disciplines; functioning of micro-credit systems & establishment of agro-industries; the importance of linking action oriented processes with political processes; communication & education; participatory methodologies; project & financial management - <i>Staff of the Regional Anchoring Institutes</i>: new knowledge & capacities on UA & systematization methodologies (IPES). Production of video & CD-ROM CIUDAD - <i>Municipality & NGOs</i>: Formulation of micro-credit programmes for UA & regulation of UA. Inter-institutional collaboration & participatory project management - <i>The community</i>: capacity building in relation to financial management of micro-credits, organic production, transformation & commercialization, recycling of organic wastes, project management & budgeting - <i>Students</i>: 5 University students (Germany: 3, Ecuador: 2) have supported the project for shorter or longer term. 1 student from the Catholic University working full time at the UMP-LAC supporting the development of the project (training in project management & implementation). 6 high school students have been involved in the project doing their practical in the community garden pilot project in El Panecillo
Institutional capacity building	<ul style="list-style-type: none"> - UMP has: increased its understanding of urban management intervention processes & the value of specific methodology used; been able to support mainstreaming of UA by integrating it into other fields of work. The project has supported the development of a common working agenda & interdisciplinary knowledge - IPES (UMP-LAC Anchoring Institution) responsible for financial management of the project. Capacity in project formulation & implementation at regional level strengthened through its involvement in AGUILA & RUAF. Co-coordinating city of the LAC City Working Group on UA & Food Security (Texcoco, Mexico) also being strengthened in its capacity to dynamite regional processes & participatory project formulation & implementation - City Consultation/Priority Action Programme, Municipality of Quito strengthened its capacity in overseeing & guiding multi-stakeholder processes, collaborating with civil & private actors, promoting community participation & formulating concrete action plans, related projects & local policies on UA
Effective local partnerships	<p><i>In the City Consultation/Priority Action Programme</i></p> <ul style="list-style-type: none"> - Local team involving municipal, civil & community actors was responsible for project management & implementation - Role of local NGOs, invaluable in daily contact with community actors - Municipal departments play a very important role in facilitating the urban farmers' access to land, inputs & capital - UMP, mainly contributing to advocacy & knowledge management components with regional information & thinking on urban management - Community is main actor for planning, guiding & evaluating the programme. Community-composting group elaborated co-operation agreement with government institution to ensure sale of product. Leadership of community co-coordinators for each of the 4 pilot projects recognized by community & asked to represent them in the Panecillo Neighbourhood Council
Gender focus	<ul style="list-style-type: none"> - Priority Action Programme implementation included gender analysis as 1st step, more explicit understanding to be reached - Project made certain advance in responding to practical need of women, but no sufficient attention has been paid in responding to strategic needs - Further reflection on gender analysis will specifically be incorporated in UMP-LAC manuals, special attention will be given in future programme development
Contribution to multi-disciplinarity	<ul style="list-style-type: none"> - UMP-LAC staff & their Anchoring Institutes established contacts & mainstreaming of UA into other UMP-LAC City Consultation & monitoring programmes - During course of project several local, regional & international actors from different disciplines (1 architect, 1 social worker & agronomists) participated - Project counted with participation of large percentage of women allowing better understanding of their roles, responsibilities & related support development of more gender equity approaches of intervention
Scientific methodological advances	<ul style="list-style-type: none"> - Methodology used City Consultation process – Action Plan – Priority Action Programme is innovative in: linking research & action, combining concrete project implementation & policy formulation/institutionalization, & bridge-building between public, private, non-governmental & community based actors. It will hopefully serve as a practical tool for other municipalities to embark on similar processes - Baseline studies should allow for concrete & participatory action planning & impact monitoring - Project contributed to understanding place of UA in its urban context & identified apparent factors for success & up scaling & ID of themes to be worked out in future. - Project showed it is necessary to apply specific techniques & methodologies to incorporate a real gender & environment perspective. It is also necessary to recognize & build upon support of & processes developed by the urban farmer to construct UA policies
Research results utilization	<ul style="list-style-type: none"> - Months after international seminar, the Quito Declaration was additionally signed by 19 new municipalities: 15 from Argentina, 1 from Bolivia & 3 from Ecuador - Municipalities (11), cities (1) & neighbourhoods (2) of 10 LAC countries are using project results for specific policy or technology interventions. Examples of these are: city consultations in gender & governance, integration of UA in urban planning & strategic development plans, strengthening of city working groups, seminars on local economic development & UA in local policies, inclusion of UA in municipal agendas & lobbying for the official acceptance of the Quito Declaration
Fund leverage	<ul style="list-style-type: none"> - In the entire project period, the total amount of 166,800CAD (106,048 USD) of additional funding to the original 330,300CAD (210, 000 USD:150,830 CAD/IDRC&150,000CAD/UNDP/UNCHS & World Bank) has been obtained, for implementation of operational activities

APPENDIX VII

Table 1 – Results and Objectives: Regional Training Course on Urban Agriculture (100641)

Objectives		Results	Methodology
General	Specific		
To develop a training process, which will improve regional conceptual & methodological capacity. This process will be done through designing, testing & evaluating materials that will enable key actors to diagnose and intervene (through policies, programs & projects) on UA related issues. Actors will then be able to manage LAC municipalities in a better way	To run regional course planning workshops, which will assess, discuss, refine & adjust a regional course proposal. This will include general objectives & approaches, module contents, evaluation process, selection of instructors & participants as well as course schedule & logistics	<ul style="list-style-type: none"> - Regional team of moderators contracted & organised. - Support of external advisers assured - E-list-server established to facilitate communications among all moderators & external advisers - 14 applications received (11 cities from 9 different countries) - 1st preparatory workshop implemented: general course parameters & specific characteristics of each training module defined - 2nd preparatory workshop implemented: pedagogic course modalities, day-to-day course planning & interaction between moderators defined, selection of course participants agreed upon - Information sources for module development identified. - Aide Memoire for 2nd preparatory workshop formulated & distributed - A report on each, on the 1st & 2nd preparatory workshops produced & distributed - Preliminary report on selection process & procedure produced & distributed 	<p><u>Planning process:</u></p> <ul style="list-style-type: none"> -official invitation to participate in the course -organisation & execution of 2 preliminary workshops to: define & approve course objectives, themes, modalities & outcomes; select participants & projects; validate pedagogic methodologies & material; define actor's roles <p><i>Tools used:</i> working groups, plenary/group discussions, field visits, didactic material, e-mail, visual demonstrations (graphics, audio-visual, group dynamics), handouts, presentations & debates</p> <p><u>Implementation process:</u></p> <ul style="list-style-type: none"> -3 weeks course (6 days/week =120 h training) -development of 7 modules; -review selected aspects of a case study -participant's cities projects <p><i>Tools used:</i> master class, group dynamics, working groups, reflection, magisterial talks, field visits & interviews, systematization & restoration of information, proposal presentation to Municipality of Quito, tutorials with moderators, participant's knowledge exchange, pair-project work</p> <p><u>Evaluation process:</u></p> <ul style="list-style-type: none"> -done during 3 weeks course, -use of quantitative & qualitative tools, -strategy applied allowed the collection of information on curriculum effectiveness, pedagogic modalities' functionality, & impact potential of the training event <p><i>Tools used:</i> participant's observation, questionnaires (150) and focus group interviews (20), evening meetings assisted by co-ordinators, evaluator & moderators; Documentation Centre registry, photocopier, & application of experience dynamics to evaluate group bonding (spider web exercise)</p>
	To generate methodological guides and training materials on particular UA issues as addressed in the different thematic modules of the course	<ul style="list-style-type: none"> - CD-ROM containing all "raw" course materials produced & distributed among course participants. - External evaluation report on the training course produced. 	
	To deliver the first regional training course on in Latin America and the Caribbean	<ul style="list-style-type: none"> - 3-week training course: 24 participants from 11 cities of 8 different countries & 8 moderators of 7 different nationalities involved. - 11 projects proposals improved after the course. 	
	To edit, publish & disseminate a training manual on UA, aimed at researchers, municipal policy advisors & makers in the region	<ul style="list-style-type: none"> - 12 City teams working on implementation of elements learned during training course or preparing the replication of (parts of) the training course at national or sub-regional level. - Requested more funds from IDRC to produce higher quality training aids 	
	To create a space within AGUILA for region-wide exchanges of municipal experiences in UA, which will facilitate long-term links among city actors in LAC	<ul style="list-style-type: none"> - Various actors from Quito (community & government representatives) involved in implementation of several training sessions & reflection on UA development in the Municipality - Linkages between training course and other UMP-LAC activities put effectively to use. - Interaction between various regional/international UA institutions & networks promoted 	

Table 2 – Impacts: Regional Training Course on Urban Agriculture (100641)

Areas of Impact	Results
Human resources development	<p><i>Technical coordinators/moderators</i></p> <ul style="list-style-type: none"> - Increased their capacity in co-ordination & implementation of regional training courses & the construction of dialogue on UA. Now in a good position to replicate the course on sub-regional or national level, thus contributing to the strengthening of a regional network on UA - UMP-LAC staff & students involved in course logistical support, seized opportunity to get more familiar with concept & aspects of UA <p><i>Participants</i></p> <ul style="list-style-type: none"> - More critical reflection on local UA development by local partners: about current dynamics of UA in their cities, facilitation of development, interventions or policy framework needed & local actors role in the process - 24 course participants from 8 different countries (2 from the Caribbean & 6 from LA) & articulated to 24 different institutions trained in new concepts & tools on UA
Institutional capacity building	<ul style="list-style-type: none"> - UMP-LAC & IPES strengthened their institutional capacities related to organisation & elaboration of regional courses - Direct involvement of AGUILA Regional Technical Secretariat & its Mexico Co-ordinator strengthened their capacity in internalizing a more regional vision into their work, incorporating a broader concept of UA, use of participatory methodologies & another institutional perspective
Effective local partnerships	<ul style="list-style-type: none"> - Required association of government-civil society representatives has dynamited local partnerships. In <i>Cuenca (Ecuador)</i>, the course forced the municipality to review its dynamic & re-establish working relationships with the local NGO Habitierra. Participation of both, the <i>Municipality of Belo Horizonte (Brazil)</i> & local NGO REDE in the course re-invigorated discussions & signing of first inter-actor agreement. <i>Cienfuegos (Cuba)</i>, contacts between the Municipality & the University has been strengthened. The Mayor is now invited to sign various co-operation agreements (including one to be signed with UMP-LAC & IPES) & collaborate more closely with the University
Gender focus	<ul style="list-style-type: none"> - Specific attention given to the topic as part of the module on participatory research & intervention methodologies - The incorporation of gender as a cross-cutting issue was present in each of the modules - Attention to gender was also evaluated separately by the external evaluator from CEAAL
Contribution to multi-disciplinarity	<ul style="list-style-type: none"> - Multi-stakeholder involvement: Government representatives benefited from a focus on diversity, participation, inclusion and equity. Civil society representatives opened their visions & experiences to a new perspective (more macro social & political interest & management on a greater scale). Representatives from 12 local/federal governments (among them 3 councillors), 6 NGO; 1 CBO (producers organisation), 3 universities & 1 regional NGO/research network in the course - Inter-regional and multi-disciplinary team of moderators and participants: <i>diverse backgrounds and disciplines of participants & moderators made the course rich in its diversity of visions, experience & contents, contributing to debates, reflection on various holistic dimensions of UA from different perspectives</i>
Scientific methodological advances	<ul style="list-style-type: none"> - Related to the course itself: experimental & innovative in its regional focus, new topic & pedagogic modalities implemented. Related to the course curriculum, relatively new concepts & dimensions of and methodological approaches. City-case study modality allows for a change in different perspectives. The 3 modalities used were considered complementary, allowed for a more participatory and constructive educational approach. Rigorous selection procedure followed assured the presence of qualified participants & projects with a high chance of being implemented - Impact of the course on scientific thinking: course showed that UA & urban environmental management are an effective entry-point for poverty alleviation & urban governance, contributing to mainstreaming of UA as a catalyst for multi-thematic approaches to urban management
Research results utilization	<ul style="list-style-type: none"> - In the cities and on (inter) regional level: support for planning and implementation of new training courses at local, national and sub-regional levels in 6 Municipalities of 6 countries in the region; exchange of experiences & staff is taking place among civil society representatives and, municipalities in the region. Regional visibility to the topic generating exchanges with other regions (Philippines and Zimbabwe). Resources mobilization by 3 municipalities through the formulation and presentation of project proposals to donor agencies. Planning and implementation of concrete activities or political interventions at city level are taking place in various municipalities of the region - Technical & policy uptake of the topic of UA by UMP-HABITAT. The course has been a vector to promote processes of up scaling of UMP supported projects & programmes to city or municipal level. Incidence on indicators & incorporation of UA related indicators in UMP-LAC projects
Fund leverage	<ul style="list-style-type: none"> - Additional funding for the amount of 19,110USD (26,693CAD), including in-kind contribution, was obtained during the total project period. Contributions came from participant regional organizations, host cities and course coordinators/organizers

APPENDIX VIII

Table 1 – Results and Objectives: Integrated System for the Treatment and Recycling of Waste Water in Latin America: Reality and Potential (100123)

Objectives		Results	Methodology
General	Specific		
To document and analyze Latin American and Caribbean experiences in domestic wastewater treatment and recovery, recommend integrated design and implementation strategies and identify new opportunities	To establish & document a typology of treatment and/or recycling systems found in the region	<ul style="list-style-type: none"> 11 LA countries prepared national inventories (6 incomplete) Information compiled so far has been processed to evaluate regional trends & to provide a preliminary version of wastewater management typologies 	Regional inventory -Guidelines (4) with corresponding instructions -Selection of an initial sample of 20 case studies in 14 countries
	To broadly describe & analyze 20 cases of water management systems (with or without treatment, with or without recovery), assessing their adequacy and appropriateness from various perspectives (technical & economic criteria, their impact on the environment, organizational considerations, strong points & weaknesses, & replicability)	<ul style="list-style-type: none"> Selection and implementation of 20 cases for general studies in 14 countries 18 general studies edited, 17 officially published 1 document comprising executive summaries (English & Spanish) of General Studies 	<u>General/Complementary & Pre Feasibility Studies</u> -Terms of reference -Reference guide -Reference model -Software REUSE -Technical visits -User manual -1 st workshop: selection of 10 cases for the following phase. -2 nd workshop selection of 7 cases for the following case -3 rd workshop
	To describe & analyze 10 of those cases in greater detail, using the same criteria as above, in addition to more detailed analysis of environmental, economic & social impact, & analysis of factors important to success of these systems from a regulatory, institutional & socio-economic perspective	<ul style="list-style-type: none"> Selection & execution of 10 complementary case studies in 9 countries 11 complementary studies concluded 	
	To produce 4 pre-feasibility studies for the implementation or improvement of integrated systems of waste water treatment & recovery	<ul style="list-style-type: none"> Selection and implementation of 7 feasibility studies 3 complete studies received, one has been sent back for revisions and the remaining two are under review 	
	To develop & test an approach for the assessment of integrated systems of waste water treatment & recovery	<ul style="list-style-type: none"> An improved version of the software REUSE prepared by CEPIS Terms of reference for the consolidated report elaborated and presented in the second annual technical report (August 2001 to June 2002) 	
	To identify basic factors essential to the success of integrated systems of waste water treatment & recovery, with special attention to regulatory, institutional & socio-economic requirements	<ul style="list-style-type: none"> Complementary studies made possible the completion of information on technical, environmental (health), social (legal & institutional) & economic (including financial) aspects of wastewater treatment & use 	
	To disseminate research results & policy recommendations to as wide a range of users as possible in the region; and	<ul style="list-style-type: none"> 8 methodological guides for the compilation of the inventory, and execution of general and complementary studies Methodological tools & documents incorporated to the wastewater homepage in CEPIS web site. Over 24,000 visitors have used the project web site since January 2001 12 technical field visits & 3 regional workshops on wastewater use. Dissemination strategies include 3 conferences; 1 congress 1 regional course on agriculture & 12 workshops 	-Visits to project sites that included lectures; lobbying & awareness meetings, working meetings, progress evaluation & mainstreaming of feasibility studies -Software REUSE -Internet (CEPIS Web site)
	To strengthen the AGUILA network by actively involving its members & other researchers associated with the project in the execution & dissemination phases	<ul style="list-style-type: none"> An article has been prepared by the project coordinators about project progress to be published in the 4th issue of the Urban Agriculture Journal Co-ordination activities in collaboration with AGUILA Executive Secretariat & IDRC – CFP for the joint realization of the AGUILA 3rd & the Latin American Round – Table Discussion 	

Table 2 – Impacts: Integrated System for the Treatment and Recycling of Waste Water in Latin America: Reality and Potential (100123)

Areas of Impact	Results
Human resources development	<ul style="list-style-type: none"> - The national technical teams used the Use of Treated Wastewater Crops Model, developed by CEPIS. - 30 persons attended each the 1st & 2nd workshop & 15 attended the 3rd one. This activity facilitated exchange of experiences among participants, significantly improving their reporting techniques - Technical teams participating in feasibility studies are now able to elaborate & implement similar studies in their countries - Implementation of “Wastewater Treatment & Use: Horizontal Co-operation Project” between Costa Rica & Guatemala is a first evidence of regional project impact
Institutional capacity building	<ul style="list-style-type: none"> - 2 lectures given to representatives from national institutions responsible for water management in 2 different countries; one on wastewater use in agriculture and one on wastewater treatment - 2 workshops on wastewater use attended by representatives from local institutions & government representations - A workshop on the software REUSE organized in the state of Ceara (Brazil) with municipal authorities, academic & financial institutions, and a four-day course-workshop on wastewater treatment and use addressed to government in Costa Rica, including the presentation of the REUSE software - Technical visits strengthened the support provided by PAHO/WHO representations, visits were also key on the evaluation of feasibility studies progress, as well as the promotion of feasibility studies’ and mainstreaming
Effective local partnerships	<ul style="list-style-type: none"> - Health & environment advisors from PAHO/WHO, academics & students from national technical teams have supported the project - A professional from IPES (member of AGUILA) part of Technical Committee during complementary study phase - The creation of the Inter-institutional Committee in La Maica, Cochabamba (Bolivia) for the mainstreaming of the project on Wastewater Treatment & Use. Several municipalities in the Region expressed their wishes to either start or continue with the project - PAHO is fostering technical co-operation among countries in the Region. This co-operation has resulted in the project “Wastewater Treatment and Use Integrated Management” jointly developed by Costa Rica & Guatemala
Gender focus	<ul style="list-style-type: none"> - In anticipation to the third workshop the Technical Committee evaluated the 7 feasibility studies & recommended the incorporation of gender aspects in their final versions
Contribution to multi-disciplinarity	<ul style="list-style-type: none"> - Experts in wastewater use & treatment, environmental, agricultural & socio-economic aspects constitute the Technical Committee - The execution of the feasibility studies allowed the definition of multi-disciplinary technical teams for each location - Technical visits allowed the strengthening of national working teams, particularly in those cases perceived as weak & also facilitated interaction among actors involved & promoted their participation in the studies
Scientific methodological advances	<ul style="list-style-type: none"> - Inventory information collected will be incorporated into the Regional Inventory Matrix prepared during the 1st phase. Indicators will be analyzed once again to confirm trend changes defined in the previous phase of the evaluation - Information collected in complementary studies is considered essential for the consolidated report that will be prepared by the Technical Committee, it will enable this research to better sustain typologies of wastewater treatment & use in LA, & to prepare methodological guidelines for the preparation of future projects - The workshop modality used at the end of each phase allowed a more accurate appreciation of the progress in each activity. It also facilitated sharing of experiences and methodologies among research teams
Research results utilization	<ul style="list-style-type: none"> - Wastewater experiences from LA enabled CEPIS to define treatment & use integrated models, which are being promoted & improved in the case studies sponsored by this project - The events held on Sept. 24-15, 2002 in Lima Peru contributed to raising awareness and sensitizing the audience about the potentials of the integrated systems in the region
Fund leverage	<ul style="list-style-type: none"> - PAHO/WHO Representative Office in Mexico and IPES – Peru contributed with 2/3 of the total funds for the two additional complementary study cases - Participants in the complementary and feasibility studies were invited to participate in the following phase, providing their national institutions contribute with at least 50% of funds required for the study

APPENDIX IX

Table 1 – Results and Objectives: AGUILA Executive Secretariat and Evaluation (100503)

Objectives		Results	Methodology
General	Specific		
To encourage UA in LAC by strengthening the AGUILA Network and its memberships	To exchange information about experiences in UA in LAC	<ul style="list-style-type: none"> • 10 cities selected for Information Demand Studio, 15 local actors identified & incorporated as members • 2335 visitors to the web page, average of 7 visits per day up to August 2002 • 51 titles & 6 magazines on UA registered in bibliographic database • Video library including 12 UA related project videos • 8 E-newsletters circulated between June 2001-May 2002 • 10 articles prepared for UA Magazine N° 6 by Editorial Committee • Collaborated with RUAF & CGIAR in the organisation of an E-conference 	<ul style="list-style-type: none"> - Website & Lyris list administration - Participatory analysis of information & communication needs of programs & institutions involved in UA - Establishment of links with other institutions & networks working in UA - Design & implementation of an UA web-based data bank - Elaboration of an E-bulletin - Electronic conferences
	To strengthen the executive secretariat, the network & its memberships by capturing additional resources & institutionalizing its activities	<ul style="list-style-type: none"> • 126 members currently form AGUILA Network. Since 2001 Network's web page has been on-line & periodically updated in IPES web site • Lyris list administered by AGUILA • Links established with CEPIS – Peru, RUAF, IPES & PGU – LAC, the Municipality of Villa El Salvador, IDRC, FAO & Galilee College (Israel) • Constitution of AGUILA-Mexico • Establishment of working committees • Elaboration & presentation of 10 project proposals • 11 countries chosen to participate in the Regional Course on UA. 38 applicants from 9 countries presented 	<ul style="list-style-type: none"> - Member's meetings - Fostering of national networks - Activation of working groups (training, research, publishing, consultancy & statutes) within the Network - Project formulation & support involving Network members
	To influence local authorities and decision-makers to include the support and promotion of UA in local urban policies.	<ul style="list-style-type: none"> • Alliances with: Municipalities of Ate & Villa El Salvador (Peru), & contacts & members from Europe & LAC • 31 letters and invitations introducing AGUILA • A leaflet published in English & Spanish presenting the Network 	<ul style="list-style-type: none"> - Strategic alliances with cities engaged in the promotion of UA - Official letters & E-messages (lobbying) addressed to local government authorities

Table 2 – Impacts: AGUILA Executive Secretariat and Evaluation (100503)

Areas of Impact	Results
Human resources development	<ul style="list-style-type: none"> - 75% of the moderators in the PGU – LAC regional contest are members of AGUILA. Through this activity received support f in the handling of web pages & electronic filing systems - 14 members participated in Regional Course for Action – Research & UA Management in LAC Cities allowing meeting & exchange of knowledge with various actors - Network members trained in electronic list management & web page design & administration
Institutional capacity building	<ul style="list-style-type: none"> - Lyris list & web page in Spanish have become very useful & easier to manage. Web page updated & modified taking into consideration suggestion from IDRC & PGU - UA workshop in Lima (Peru) & Regional Course in Quito (Ecuador) both recommended the establishment of National AGUILA Networks in Peru, Brazil and Argentina – AGUILA Mexico has been established - IPES work in UA strengthened national & regional level - Editorial Committee skills strengthened; authors putting extra efforts to improve articles quality since demand for submissions is greater than space allotted for publications - Dissemination of information through various means has provided Network with skills to bring together authors & experts with knowledge about UA topics in the region
Effective local partnerships	<ul style="list-style-type: none"> - Identification & incorporation of 15 local actors as membership applicants during “Information Demand Studio” - Participation of AGUILA in the 1st Workshop on UA in Lima (Peru) allowed contact with more than 58 individuals from 19 institutions & 4 municipalities from Lima working in UA - Recognition of Network’s role in UA is reflected on its participation in several FAO projects
Contribution to multi-disciplinarity	<ul style="list-style-type: none"> - Working Committee’s statutes made available to members on the web page. Areas of committee’s expertise include food & conservation, urban agriculture, urban management & agro-ecology - Common areas of interest defined over Network in order to proceed with formulation of projects - Collaboration of Network in organisation of E-conferences with other partners has stimulated discussion of various subjects related to UA - IPES & its Executive Director participation in viability study in CEPIS REUSE project influenced the use of participatory methodological tools
Scientific methodological advances	<ul style="list-style-type: none"> - Information & communication strategies used by Network contributed to dissemination of cognitive processes & methodologies used in other research activities - Reactivation of Editorial Committee made possible identification of dissemination of information needs in the region - A methodology to evaluate articles submitted for publication established and it consists of an evaluation sheet including evaluators’ criteria & recommendations for authors
Research results utilization	<ul style="list-style-type: none"> - Members attracted to the Network include NGOs, independent farmers, local & central governments institutions - Presence of sub-section on “UA magazines in Spanish” in the Publication section of the web page has helped to partially resolve the magazine distribution & information availability problems - Demand analysis demonstrated need for a greater presence of LAC articles in the Magazine - Reactivation of working committees should stimulate incorporation of regional articles in the RUAF magazine
Fund leverage	<ul style="list-style-type: none"> - Fund leverage activities included elaboration & presentation of projects in Fairs & to regional/international institutions working in the topic of UA, publication of UA magazine Spanish (contributions from RUAF, PGU & IPES) and IPES contribution as host institutions (7760.00 USD per year)

APPENDIX X

Table 1 – Results and Objectives: Participatory Impact Evaluation Methodologies for Urban Agriculture in Latin America and The Caribbean (04486)

Objectives		Results	Tools used
General	Specific		
To design & apply a methodology to measure & evaluate UA interventions in countries representative of different social & production systems in LAC. Interventions will be measured in terms of their impacts in social, economic, nutritional & environmental areas, particularly in connection with the livelihoods of poor urban population sectors	Survey the extent & significance of agricultural activities in urban areas. Also to measure & evaluate the impact of UA on: local income, employment & community development, food security & nutrition, & on the urban environment in selected interventions in six LA countries	<ul style="list-style-type: none"> 3 countries selected for the study Trips & field visits (3) to 2 of the selected counties including visits to several internationals, regional & local institutions. Collection of relevant demographic information Working meetings with UMP – LAC &, Municipality of Cuenca (Ecuador) & AGUILA in Cuba Relevant UA bibliography reviewed and selected 3 diagnostics & mapping of UA interventions in selected cities 3 directories of organisations/institutions in selected cities 	<ul style="list-style-type: none"> -Meetings & electronic discussions -Visits to selected countries -Meetings with local organisations & institutions involved in UA -Mapping & case study selection -Identification of consultants -Field visits -Surveys, Review of magazines, articles & methodologies on UA
	Increase awareness among local & national policy makers, town planners, research institutes & NGOs on UA as a component of urban development & resource management strategies	<ul style="list-style-type: none"> Dissemination of the Project in the “National Forum on Food Security”(Lima, March 2000). Project results (to that date) presented to more than 30 local public/private organizations Co-ordination meetings REDCAHOR & EARTH University (Costa Rica), Zamorano School (Honduras), CIP/CGIAR (Lima) & World Bank offices (Peru & Argentina) Working agreement between REDE & municipal government of Villa Maria del Triunfo District 	<ul style="list-style-type: none"> -Co-ordination meetings -Participation in national forums
	To strengthen interaction between members of the AGUILA & other stakeholders in UA with participating countries, by encouraging joint initiatives, documenting research results & stimulating information exchange	<ul style="list-style-type: none"> Dissemination of “UA Conceptual Framework” and disseminated through AGUILA to stimulate dialogue & exchange information “Operational Plan for the Project” elaborated 	<ul style="list-style-type: none"> -Brainstorming activities -Workshops
	Expand & enrich AGUILA’s database, through the production & dissemination of technical documents. Documents will analyse, review & compare information on successful & less successful UA interventions in LAC		
	To produce & test a methodological protocol for the systematic measurement & participatory evaluation of impacts of UA interventions in the region. And to expand corresponding expertise available in participating countries	<ul style="list-style-type: none"> Diagnostic & mapping of UA activities in the urban core of Lima Two-day workshop for the selection of 3 case studies: elaboration of document on workshop proceedings & criteria for selection of cases Methodological package elaborated including methodological tools & guides (key informant interviews, participatory survey & workshops) Evaluation methodology developed & implemented. Methodology focuses on poverty, gender, technology & location aspects. Surveys were completed in 3 of 4 cities selected. A total of 115 entities intervening in UA: 34 in Lima, 60 in Buenos Aires & 21 in Santiago In Lima & Buenos Aires 70% of the entities identified have been interviewed. 200 UA farmers families surveyed in Lima 4 participatory workshops in the topics of food security & nutrition, economy, environment & agriculture and social aspects 	<ul style="list-style-type: none"> -Brainstorming activities -Interviews with key informants -Collection of secondary information -Surveys & structured interviews -Participatory workshops -Field visits

Table 2 – Impacts: Participatory Impact Evaluation Methodologies for Urban Agriculture in Latin America and The Caribbean (04486)

Areas of Impact	Results
Human resources development	<ul style="list-style-type: none"> - 15 people participated in the case study selection workshop for the Lima case. The workshop was held in Peru with participants from REDE, members of the AGUILA Network, consultants and collaborating experts - Member of the research team actively participated in international (Kenya & Holland), regional (Costa Rica) and local events (Peru) as well as in the working table on Food Security and UA (Costa Rica) and the Food Security Institute Agreement with Molina University and Agroaction – Germany - Several students from the Nutrition Institute – La Molina University trained on the application of methodological tools
Institutional capacity building	<ul style="list-style-type: none"> - The formulation of the project strengthened and updated REDE's knowledge on UA including methodologies and research mechanisms. This knowledge has been shared with other institution in the region working on UA - The organisation was able to improve its premises and to further strengthen and develop project management and administration, and negotiation skills. As a result, the Finance and Administrative Department of REDE has been reorganized and improved financial administration
Effective local partnerships	<ul style="list-style-type: none"> - 3 working agreements reached between REDE & regional/local organisation - Work done in the Lima case facilitated the contact of REDE with local groups and organisations working in UA, allowing REDE to know their experiences and provided the team with elements to evaluate research development among targeted groups - 30 private, public & academic institutions from selected countries collaborated by facilitating adequate information & participating - <i>Negative:</i> the assessment of project results and impacts demonstrate the lack of effective communication and sharing of information were the major factors hindering collaboration between REDE and AGUILA
Gender focus	<ul style="list-style-type: none"> - The working agreement reached between REDE and the municipal government of Villa Maria del Triunfo District resulted in greater support to women's organisations working on horticultural and hydroponic activities - Gender dimension was incorporated into research team meetings in order to develop a gender sensitive methodology. For research team introducing a gender perspective among UA functionaries & field workers was a difficult task and it has not been fully accepted yet. Majority of government functionaries and development workers perceive a "gender focussed project" as either one where direct beneficiaries are women or where the greater numbers of participants are women
Contribution to multi-disciplinarity	<ul style="list-style-type: none"> - The project brought together a team composed by an economist, a nutritionist, an expert in participatory methodologies, and anthropologist, a statistician and a demographer. Part of the team also was a project leader, a lead researcher, 2 regional consultants (sociologist & anthropologist) and 2 international consultants (biologist & sociologists) - Sharing of information with team members from different disciplines has enriched REDE's knowledge in the economic, nutritional and gender aspects of UA
Scientific methodological advances	<ul style="list-style-type: none"> - The presentation of project results during the March 2000, National Forum on Food Security resulted in the inclusion of UA as Food Security strategy among the urban poor in the Forum Agreements - Survey results showed the lack of aggregated statistical data on UA. This resulted in the application of a mapping exercise for the diagnosis of existing UA interventions by private/public institutions and organisations
Research results utilisation	<ul style="list-style-type: none"> - The availability of this kind of methodology will be useful to AGUILA members & institutions working in UA In Lima, the methodology is already being used by REDE in the implementation of a collaborative project with a local academic institution & an international organisation. Random sampling is being done in surveys to assess food security & UA on urban & peri-urban contexts - This project has been a valuable contribution to the further development and understanding of UA in the countries selected. Research results and objective of this project have been shared with colleagues in various local, regional & international events
Fund leverage	<ul style="list-style-type: none"> - REDE's work with IDRC has gained them recognition among national and international aid organisations, resulting in the funding of another project by two European organisations - Various institutions provided in kind contribution (dissemination, sponsorships, key contacts & facilitation of information) - <i>Negative:</i> the recipient institution suggested that the lack of adequate funding and demonstrated interest in the project by other institutions was a major hurdle in the satisfactory accomplishment of project results